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THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 103, No. 7 | 535 North Dearborn Street, CHICAGO, ILL. | AUGUST 18, 1934

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Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of Oct. 3, 1917, authorized on June 14, 1918.

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, No. 7 CHICAGO, ILLINOIS AUGUST 18, 1934

THE ENDURING ACHIEVEMENTS OF SIR CHARLES BELL

CHAIRMAN'S ADDRESS

HENRY W. WOLTMAN, M.D.

ROCHESTER, MINN.

For almost 2,000 years physiology of the nervous system had been at a standstill. Galen had wrought with such master strokes that the work seemed finished, or impossible of advancement. There existed a heritage that men were unwilling to dishonor.

In anatomy, progress had been more heartening. "Seven books on the structure of the human body" (1543) had broken the impasse, made possible an anatomic method of thinking, and laid the foundation of modern medicine. Unwillingly did Sylvius finally bend to the contentions of Vesalius with the remark, "Yes, man has changed, but not for the better."

Then there appeared a man with an idea, a man who left the revolving circle and showed the way to progress. The importance of this idea to physiologic investigations his magnificent contemporary, Johannes Müller, placed beside that of the discovery of the circulation of the blood by Harvey.

The salient events in the life of Charles Bell can be presented in a few words, for his career was singularly free from vicissitudes and, accordingly, no good biography of him has ever been written. He was born in 1774, in Edinburgh. His dissentient father, the Reverend John Bell, had severed his connection with the Episcopal Church to become a Presbyterian. His mother, highly intellectual and artistic, was never very well, nor very ill, during the eighty years of her life. She was, however, a devoted mother and, Bell said, his only teacher. Of the four sons, three achieved distinction: George Joseph, in law, and John and Charles in medicine.

John and Charles, while still very young, were taught by their mother to draw, and throughout life Charles cultivated this art, which, he said, "is necessary to many pursuits." [1] He also became an accomplished etcher, painter and modeler, and he used his art generously to illustrate his medical works (fig. 1).

In Edinburgh, Charles studied anatomy under the tutelage of his brother John, who was eleven years his senior, and later with him became co-author of a textbook of anatomy, Charles writing the part that dealt with the nervous system. "The study of the nerves," Charles said, "is in truth the best foundation of medical knowledge." When his brother John attempted to gain for the younger surgeons the privilege of operating at the infirmary, the ensuing quarrel became a public scandal and closed the way to advancement for Charles. And so, in 1804, with £12 in his pocket, Charles left Edinburgh and embarked on a five-day journey by coach to London. Here he was received by Mr. Anthony Carlisle of Westminster Hospital with the observation "We like to manufacture our own raw material in London." Unperturbed and undismayed, he affiliated himself with the School of Great Windmill Street, founded by John and William Hunter.

"A man can surely do what he wills to do," says Schopenhauer, "but he cannot determine what he wills." Not so with Charles Bell. To carry forward the work of the Munros and the Hunters was not only his wish, it was his duty; he not only toiled industriously but with an all-consuming passion. Like the other Scots who invaded London, for it was an invasion, he achieved fame, and he shared their traits. "Their discoveries," Keith [2] says of these men, "were the only fortunes they designed for coming generations." In 1834, in his sixtieth year, Bell took the opportunity presented in making an address to remove a "very prevailing notion of the medical men in Edinburgh" that he was "pugnacious and sarcastic." [2]

Charles Bell had few intimates, but he was often seen at the theater and he was fond of music and of fly-fishing. He took pride in his appearance and was ever urbane in speech and in demeanor. He enjoyed teaching and had a good voice; he shunned prolixity and avoided Latin expressions when English served his purpose. Professionally, he was esteemed and he had a large practice. Although he avoided cultivating personal relationships with his patients, he treated them with tenderness; for example, he always sought to make a small incision, which he said was the most painful part of an operation. Corson quotes Roux the great French surgeon, who regarded Bell affectionately, as saying "Charles Bell is one of the few Englishmen who operates like a Frenchman, quickly and with grace, without affectation." When Bell's card was put in Roux's hand, it was "Ah! Sharley Bell! C'est lui-même!" [3]

In 1830, on the accession of William IV, he was made a knight of the Guelphic Order of Hanover. In 1836, after thirty-two years in London, he was appointed professor of surgery to the University of Edinburgh. In the last years he suffered from attacks of angina pectoris and he died during one of them in 1842, at the age of 68.

From the Section on Neurology, the Mayo Clinic.

Read before the Section on Nervous and Mental Diseases at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Bell, Sir Charles: Expression: Its Anatomy and Philosophy, New York, Fowler and Wells, 1883.

2. Keith, Arthur: The Position of Sir Charles Bell Amongst Anatomists, Lancet **1**: 290-293 (Feb. 4) 1911.

3. Corson, E. R.: Sir Charles Bell: The Man and His Work, Bull. Johns Hopkins Hosp. **21**: 171-182 (June) 1910.

BELL'S "IDEA OF A NEW ANATOMY OF THE BRAIN"

A moment ago I let fall a remark concerning an idea. Bell tells us what this is in his "Idea of a New Anatomy of the Brain." Of the original 100 copies only two are known to remain, one in the British Museum and one in the Library of the Surgeon General of the United States Army. Ebstein has provided us with a faithful reproduction of the original text.[4]

In 1807 Charles wrote to his brother: "My new anatomy of the brain is a thing that occupies my brain almost exclusively. I hinted to you formerly that I was burning, or, on the eve of a grand discovery."

Bell wrote concisely and, on the whole, with remarkable clarity. Since there has been some dispute as to his discovery that the posterior roots carry sensation, it is hardly fair to present excerpts from the already succinct statement of his "Idea." But let me present the salient points, as I see them, in Bell's own words and in the order in which he gave them:

The prevailing doctrine of the anatomical school is, that the whole brain is a common sensorium.[4] . . . I have to offer reasons for believing that the cerebrum and cerebellum are different in function as in form; that the parts of the cerebrum

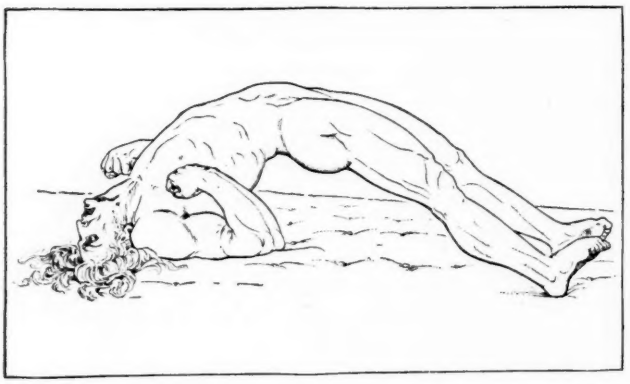

Fig. 1.—Bell's picture of opisthotonos. A drawing by him of a patient with tetanus following an injury to the head sustained at the battle of Corunna. (Obtained through the courtesy of Prof. J. R. Learmonth of Aberdeen and published with the permission of the Royal College of Surgeons of Edinburgh and the Museum of Royal College of Surgeons of Edinburgh.)

have different functions; and that the nerves which we trace in the body are not single nerves possessing various powers, but bundles of different nerves, whose filaments are united for the convenience of distribution, but which are distinct in office, as they are in origin from the brain.[4] . . . The external organs of the senses have the matter of the nerves adapted to receive certain impressions. . . . The idea or perception is according to the part of the brain to which the nerve is attached. . . . It is also very remarkable that an impression made on two different nerves of sense, though with the same instrument, will produce two distinct sensations, and the ideas resulting will have relation only to the organ affected.[4] . . .

Further, we can trace down the crura of the cerebrum into the anterior fasciculus of the spinal marrow, the crura of the cerebellum into the posterior fasciculus; I thought that here I might have an opportunity of touching the cerebellum, as it were, through the posterior portion of the spinal marrow, and the cerebrum by the anterior portion. . . . I found that injury done to the anterior portion of the spinal marrow, convulsed the animal more certainly than injury done to the posterior portion. . . .

4. Bell, Sir Charles: Idea of a New Anatomy of the Brain, London, Strahan and Preston, 1811. Idee einer neuen Hirnanatomie (1811) Originaltext und Uebersetzung mit Einleitung von Erich Ebstein, Leipzig, J. A. Barth, 1911.

Next, considering that the spinal nerves have a double root, and being of opinion that the properties of the nerves are derived from their connections with the parts of the brain, I thought that I had an opportunity of putting my opinion to the test of experiment and of proving at the same time that nerves of different endowments were in the same cord, and held together by the same sheath (fig. 2). . . . On laying bare the roots of the spinal nerves, I found that I could cut across the posterior fasciculus of nerves, which took its origin from the posterior portion of the spinal marrow, without convulsing the muscles of the back; but that on touching the anterior fasciculus with the point of the knife, the muscles of the back were immediately convulsed. . . . . Such were my reasons for concluding that the cerebrum and the cerebellum were parts distinct in function, and that every nerve possessing a double function obtained that by having a double root. . . .

The eighth nerve [in modern nomenclature N. IX, N. X, N. XI] is from the portion of the medulla oblongata which belongs to the cerebellum; the ninth nerve [now called N. XII] comes from the portion which belongs to the cerebrum. The first is a nerve of the class called vital nerves, controlling secretly the operation of the body; the last is the motor nerve of the tongue and is an instrument of volition. . . . The nerves proceeding from the Crus Cerebelli go everywhere (in seeming union with those from the Crus Cerebri), they unite the body together, and control the actions of the bodily frame; and especially govern the operation of the viscera necessary to the continuance of life. . . . . The cerebrum I consider as the grand organ by which the mind is united to the body. Into it all the nerves from the external organs of the senses enter; and from it all the nerves which are agents of the will pass out. . . .

We find that the several roots are distinct in their endowments, and are in respect to office distinct nerves. . . .

The nerves of sense, the olfactory, the optic, the auditory, and the gustatory nerve, are traced backward into certain tubercles and convex bodies in the base of the brain. And I may say that the nerves of sense either form tubercles before entering the brain, or they enter into those convexities in the base of the cerebrum. . . . As certainly as we discover an animal to have an external organ of sense, we find also a medullary tubercle. . . .

From the Crura Cerebri, or its prolongation in the anterior fasciculi of the spinal marrow, go off the nerves of motion. . . . But with these nerves of motion which are passing outward there are nerves going inwards; nerves from the surfaces of the body; nerves of touch, and nerves of peculiar sensibility, having their seat in the body or viscera. It is not improbable that the tracts of cinceritious matter, which we observe in the course of the medullary matter of the brain, are the seat of such peculiar sensibilities, the organs of certain powers which seem resident in the body.

Herein Bell anticipates the later discoveries of cerebral localization. He states clearly what is now referred to as "the doctrine of specific nerve energies," a phrase coined by Müller and to whom, and perhaps for this reason, this discovery is usually attributed and who assigns credit largely to Magendie, who did not mention Bell.

Bell was very definite regarding the function of the anterior nerve roots; unfortunately he was not so specific regarding the function of the posterior roots. One may infer, from what he says, that the posterior roots, the cerebellum and the visceral nerve supply are each part of a closely knit system. At the same time he spoke with positiveness regarding the different functions united in peripheral nerves, of cutaneous sensation, of a separation of function in the nerve roots, and of the relationship of ganglions to sensation in a manner that might justify the inference that he regarded the posterior roots as being sensory in function. He said later that this is what he meant and

that further prosecution of the subject required the introduction of medical cases.

Bell attempted to set up an argument through inference, that is, by comparing the function of the spinal roots with the function of the sensory and motor components of the fifth cranial nerve, as determined by experiments on the fifth and seventh cranial nerves of an ass. That he did not parade his grand discovery, for he knew it was a grand discovery, and that he discontinued the original experiments on living animals, seems proof of his sincerity. That he should stop thinking on the subject is incredible.

Here the shadow of another great physiologist falls across our path. In 1822 Magendie, experimenting on a litter of eight puppies, severed the posterior roots of the lumbar and sacral nerves on one side. At the outset he thought that the limb corresponding to the divided roots was entirely paralyzed, but he later saw it move in a very evident manner, although its sensibility remained absolutely abolished. Then he cut the anterior roots, and he found the limb was completely immobile although it preserved an unequivocal sensibility.[5]

Magendie said he was unaware of Bell's work. Mr. John Shaw, Bell's student and brother-in-law, stated that he had visited Magendie in August 1821, had discussed Bell's views, and had repeated some of Bell's experiments. Evidently Magendie believed that both roots carry both motor and sensory impulses, but in different proportions.[6]

In 1831 Müller wrote: "In a good physiological experiment, as in a good physical experiment, at every place, at every time, under the same circumstances, the same safe and unequivocal phenomena result; that cannot be said of the previous attempts to prove Bell's law. From the injury and general loss of power the error may be greater than the appearance of the results." Müller turned to frogs, which live a long time after the spinal column has been opened. The results of his experiments were convincing. The frogs seemed to remain well and hopped about cheerfully. "Irritation of the anterior roots with a galvanic current produces the strongest twitching. Galvanic irritation of the posterior roots never produces a trace of twitching." These results amazed him, for he thought that irritating the posterior roots would have some effect on the muscle. The conclusion, he says, is as sure as "two times two is four."

The "courteous and generous manner" in which Magendie dealt with Bell's claim to priority has been pointed out. Magendie complimented Bell on his ingenious ideas and said he had almost discovered the function of the spinal roots.[7]

Bell retorted, "Experiments have never been the means of discovery and a survey of what has been attempted of late years in physiology will prove that the opening of living animals has done more to perpetuate error than to confirm the just views taken from the study of anatomy and natural motions. . . . "Surely, it is time that the schools of this kingdom should be distinguished from those of France. Let physiologists of that country borrow from us, and follow up our opinions by experiments (see the experiments of Magendie on the distinction in the roots of the spinal nerves) but let us continue to build that structure which has been commenced in the labours of the Munros and Hunters."

Magendie wrote (1830): "His [Bell's] investigative spirit, while a bit speculative, his great ability in the art of dissection, his rare talent in drawing, will always assure him a distinguished place among the anatomists of our time. But why should this teacher cast a shadow upon his works and upon himself in not giving justice where it is due? Why does he preserve this barbarous patriotism which repulses everything that does not come from his own country? Why does he pretend to discoveries which he has not made? Without a doubt, because it is his character, which it is not easy to change even if one may wish it." When Magendie announced some observations illustrating the principle of the specific dynamic action of nerves as his own, Bell asked, "Did you not tell us that you had a little English book in which this is written?"

Discovery of the motor and sensory functions of the fifth and seventh cranial nerves is also claimed by Bell. Waller gives Mayo unqualified credit for having

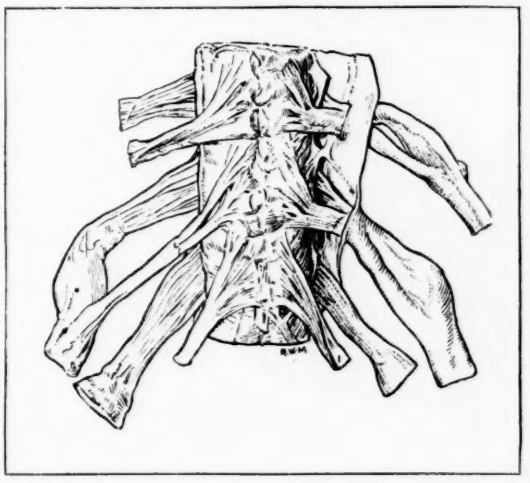

Fig. 2.—Drawing by Bell of his original dissection of the roots of the spinal cord (see parenthetical note to figure 1).

made these important distinctions.[8] Bell altered passages of previously published papers, in the publication of his textbook, to conform with the accumulation of more recent and more accurate data. This may have the "appearance of underhand dealing," as his critics claim; however, it may occur without thought of deception. Bell may not always have acknowledged the laboratory source of his newer information, but it must be remembered that he was thoughtfully and assiduously accumulating clinical experiences which he was ever interpreting in the light of anatomy. Surgeons daily saw cases in which these nerves had been injured or in which they themselves had cut them. It seemed inconceivable to such a master anatomist as Bell that these things were not already known.

Time and again this dispute breaks out among the admirers of these two men; it delights readers who enjoy an intellectual skirmish and satisfies the participants; it is not yet settled nor will it be. Those interested will find what they seek, though not the solution, in the *Lancet*, 1911-1912, wherein Arthur Keith and

5. Waller, A. D.: Charles Bell and the Motor and Sensory Functions of Spinal Nerves, Lancet **1**: 614-615 (March 4) 1911.

6. Bell, Sir Charles: The Nervous System of the Human Body, Embracing the Papers Delivered to the Royal Society on the Subject of the Nerves; with Appendix Containing Cases and Letters of Consultations on Nervous Diseases, London, H. Renshaw, 1844.

7. Guthrie, Leonard: Charles Bell and the Motor and Sensory Functions of Spinal Nerves, Lancet **1**: 697 (March 11) 1911.

8. Waller, A. D.: On the Claim of Sir Charles Bell to the Discovery of Motor and Sensory Nerve Channels, Lancet **2**: 900-905 (Sept. 28) 1912.

A. D. Waller, Leonard Guthrie and F. W. Eldridge-Green exchange views.

The mere acknowledgment of any untoward criticism in a brief review of a man's life always carries undue weight, and it may create the impression that Bell was a selfish, ruthless and unprincipled adventurer in the field of medical science. This he was not. As Don Quixote sagely remarked, "The great Homer wrote not in Latin, for he was a Greek; and Virgil wrote not in Greek, because he was a Latin." On occasion Sir Charles cut his pattern to fit his cloth, and the cloth was furnished by the times and its men.

BELL'S PALSY

Bell's name has become a common word in neurology. One thinks first of Bell's palsy. When Bell began his work, utter confusion prevailed. It was thought that the direction of nerve forces was reversible; that many small nerves were equivalent to one larger one; that the two nerves are given to the face lest, by the accidental division of one, the face should be deprived of nervous power altogether; that if one nerve of the face were cut the remaining nerve would bestow both sense and motion, though in a diminished degree. This was the authority on which surgeons were wont to divide one or other nerve of the face in the attempt to cure tic douloureux.

"It is very frequent," he says, "for young people to have what is vulgarly called a blight, from exposure to cold; by which is meant a slight palsy of the muscles on one side of the face. Inflammation of glands seated behind the angle of the jaw will sometimes produce this. Before these observations, it would have been said, that paralysis could not be so produced, because the parts are plentifully supplied by the branches of the fifth nerve; that the disease must be in the brain."

He appends numerous case reports of this condition and emphasizes the good prognosis.

THE EXTERNAL RESPIRATORY NERVE OF BELL

One hears also of the "nerve of Bell." Bell was tremendously interested in the play of muscles involved in respiration, speech and expression. "The nerves on which the associated actions of voluntary and excited respiration depend, arise very nearly together." [6]

He says (1821): "The following are the nerves to be enumerated as respiratory nerves, according to their functions. 1. Par vagum, the eighth of Willis, the pneumo-gastric nerve of the modern French physiologists. 2. Respiratory nerve of the face, being that which is called the portio dura of the seventh. 3. Glossopharyngeal. 4. Superior respiratory nerve of the trunk, being that which is called spinal accessory. 5. Great internal respiratory nerve, the phrenic or diaphragmatic nerve of authors. 6. The external respiratory nerve." (In "The Anatomy and Physiology of the Human Body," he says, of the fifth cervical nerve, "This nerve I call the External Respiratory Nerve.") This has a similar origin with the preceding nerve. It comes out from the cervical vertebrae and is connected with the phrenic nerve. It runs down the neck, crosses the cervical and axillary nerves, passes through the axilla and arrives on the outside of the ribs, to supply the serratus magnus anticus, which, it is scarcely necessary to observe, is a muscle already supplied by nerves coming out between the ribs, from the system of regular nerves.[6]

BELL'S SIGN

The title of the paper in which this sign was described is "On the Motions of the Eye, in Illustration of the Uses of the Muscles and Nerves of the Orbit" (1823). This paper is a masterpiece. It is crammed with observations, so briefly, so clearly described that it ought to lie near the hand of every author and editor of a medical paper. I shall quote from this paper: [1]

> There is a motion of the eye-ball, which, from its rapidity, has escaped observation. At the instant in which the eye-lids are closed, the eye-ball makes a movement which raises the cornea under the upper eye-lid. . . . If we fix one eye upon an object, and close the other with the finger in such a manner as to feel the convexity of the cornea through the eye-lid, and shut the eye that is open, we shall feel that the cornea of the other eye is instantly elevated; and that it thus rises and falls in sympathy with the eye that is closed and opened. This change of the position of the eye-ball takes place during the most rapid winking motions of the eye-lids. . . . If the eye-balls were to remain without motion, the margins of the eye-lids would meet in such a manner on the surface of the cornea, that a certain portion would be left untouched, and the eye would have no power of clearing off what obscured the vision, at that principal part of the lucid cornea which is the very axis of the eye.

He supplemented these observations with experiments on monkeys, in which he cut the superior rectus muscle, the superior oblique muscle and the inferior oblique muscle. "By these experiments it is proved, first, that the division of the oblique muscles does not in any degree affect the voluntary motions by which the eye is directed to objects. Secondly, that the division of the recti does not prevent the involuntary motions. . . . When the eye is at rest, as in sleep, or even when the eye-lids are shut, the sensation of the retina being then neglected, the voluntary muscles resign their office, and the involuntary muscles draw the pupil under the upper eye-lid. This is the condition of the organ during perfect repose."

While conducting the experiments on the oblique muscles, he appended a weight to the tendon of the superior oblique, which he noted descended during the contraction of the inferior oblique. He recognized not only the principle of reciprocal innervation but demonstrated it experimentally and observed, "There must be particular and appropriate nerves to form this double bond to cause them to conspire in relaxation as well as to combine in contraction."

MUSCLE SENSE

While there had been, as Bell later discovered, speculation regarding sensation in muscles, it had not been placed on a parity with other modalities of sensation or expressed as a physiologic concept. He says:

> It will presently appear that the motor nerves are not suitable internuncii between them and the sensorium. . . . Between the brain and the muscles there is a circle of nerves; one nerve conveys the influence from the brain to the muscle, another gives the sense of the condition of the muscles to the brain. . . . The lower degree of sensibility to pain possessed by the muscles, and their insensibility to heat, is no argument against their having nerves which are alive to the most minute changes of action in their fibres.[6]

BELL AS TEACHER AND CLINICIAN

When one considers the methods by which Bell contributed so richly to neurophysiology, one senses his greatness. Experiment is one of the most helpful tools of the physiologist, yet Bell with remarkable

prescience drew most of his facts from anatomy. He had a remarkable facility of coordinating structure with normal activity. To Bell, anatomy was a living subject; with it he salted his clinical observations.

Gentlemen [he says], wise men pursue some determined object. I may have erred in having more than one. I confess it has been my desire to combine the philosophy of the profession with the practice of it, because I believe them to be necessary to each other, and both to the true respectability of the individual.[6] . . . For all real improvements in our science are suggested by the occurrences in practice. . . . None will hesitate to say that it is our duty to observe accurately when an accident may be converted into an experiment. This poor man was tossed by a bull; the horn went in here, at the angle of the jaw, and he hung suspended upon it until, the integuments before the ear giving way, he dropped. . . . And you cannot resist the conviction that the remaining sensibility is owing to the entireness of the branches of the fifth pair, which come out through the orbit, and through the upper and lower maxillary bones; whilst the loss of motion has resulted from the tearing of the portio dura.

The consummate art with which he presented a case is in evidence in the following:

Patient with Dr. Marshall Hall. Apparently about sixty: his intellect I ought to say entire, since he was complimentary, but with a manner singularly in contrast with any thing like interest. All the lower part of his face is relaxed in paralysis; the lips hanging loose; speaking consequently very imperfectly. The same inactivity and want of expression in his nostrils. He has lost the left eye, and he has to hold up the eyelid of the right eye with the finger to see us. He closes his jaws very feebly, and there is a sensible defect of action in the masseter and temporal muscles of both sides. His complaint commenced about three years ago in an extraordinary weariness of the jaw, while at dinner, and which now continues. The taste is natural, and the sensibility of the tongue entire; but the action of the tongue feeble, so that he must use his finger sometimes to assist it in moving the morsel. He cannot spit out. There is a complete paralysis of the velum and uvula, so that when he drinks the fluid comes out through his nose. He has great difficulty in swallowing, that is, in propelling the morsel from the dorsum of the tongue into the pharynx. This, at present, is the most serious and pressing evil.

One more case history I will give, since it may be the first recorded case of spontaneous, hyperemic atlo-axoid dislocation, nasopharyngeal torticollis, or Grisel's syndrome, the nature of which he recognized:

A patient, who had a deep ulcer in the back part of the throat, was seized with symptoms like those of apoplexy. These symptoms continued for two hours. At this time the patient's head fell suddenly forward, and he instantly expired. On dissection, it was found that the ulcer had destroyed the transverse ligament, which holds the process of the dentata in its place. In consequence of the failure of this support, the process was thrown back so as to compress the spinal marrow. The parts are preserved in my collection (fig. 3).

It is interesting not only to know what a man has done but to seek that imponderable quality in him that will answer the query How did he do it? Obviously Bell did not idle away much of his time. He had his own idea of relative values and spent little effort in what is often called "playing politics." He spoke of his friend as the "sarcastic Mr. Abernethy" and advised young gentlemen who went to the College of Surgeons in order to pass to "keep to old theories." Very possibly Bell was not a man we should have loved. Aristotle said, "Men who desire to learn, must previously know how to doubt; for science is only the resolution of previous doubts, but he who does not know the knot, is unable to untie it." Bell knew the knot. He had an idea and pursued it like one possessed. As Stevenson has said, "When a man begins to sharpen one faculty and keeps on sharpening it with tireless perseverance, he can achieve wonders." That is, he worked. He had faith in himself and "never blamed a pear tree for not bearing plums."

Our interest in men should not remain wholly static. Just as their achievements reach into the future, so do their personalities bear fruit. In closing, let me leave with you some thoughts expressed by this great man:

Since I am about to describe all the niceties and difficulties of the operation for Strangulated Hernia, I must in the first place declare that it requires more knowledge and experience to decide upon the right time of performing it, than to do it well.[9] . . .

The viscera of the abdomen perform functions the most independent of the will and over which the mind has no control.

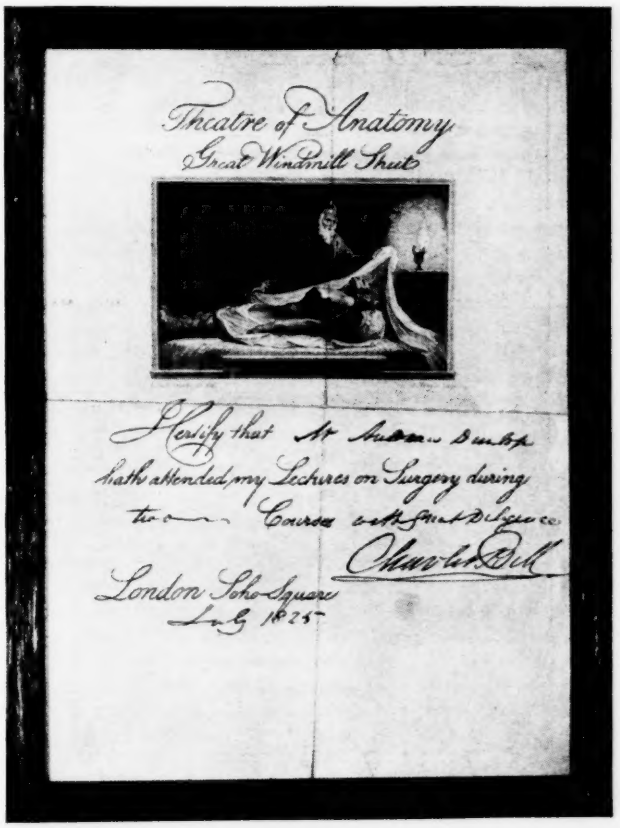

Fig. 3.—Certificate issued by Sir Charles Bell to one of his students (see parenthetical note to figure 1).

Indeed it appears to be one of the happiest provisions of Nature that these functions of vital importance should be withdrawn from the governance of the mind. . . .

I acknowledge that in the dissecting room the student learns the elements only; that to let loose upon the world a young surgeon, whose education has been confined to dissection, is like arming a man bereft of reason.[10] . . .

A public operation, where young surgeons are attending, ought to be done not only in a manner that shall be safe to the individual who suffers, but exemplary to those who are to learn. . . .

These are the authors who avoid plainness, as if it were meanness; who are studious of hard words, as if they constituted the perfection of science; "it is their trade, it is their

9. Bell, Sir Charles: Illustrations of the Great Operations of Surgery, Trepan, Hernia, Amputation, Aneurism, and Lithotomy, London, Longman, Hurst, Rees, Orme, and Brown, 1821.

10. Bell, Sir Charles: A System of Operative Surgery, Founded on the Basis of Anatomy, Hartford, Hale and Hosmer 2, 1812.

mystery to write obscurely," and fully sorely does the student feel it. . . .

Haller remembers, that while he was lying in a bad fever, he suffered so much from the pulsations of the carotid artery within the skull that his head was lifted from his pillow at every stroke. I wish he had said "seemed to be lifted from the pillow at every stroke.[11] . . .

Did I ever tell you [he wrote to his brother] I was offered £100 a year for the use of my name? But I thought they would dirty it, so I would not lend it. It was to stick on the first leaf of a journal. . . .

You tell me to cultivate men; I wish you had said, "to be industrious and cultivate a proud spirit of independence."[3] . . .

You say that no man can rise into great practice without being in company or, rather, say society. I do not agree with you. Pardon my vanity when I say that my business comes through, and will increase by, different means. My patients are now of a proper class, whom I know nothing of. They come from my character, and are retained by finding relief; by being treated with attention and kindness. My means of being known are through my books and pupils. I retain my consequence by preferring science to practice.[3] . . .

I have referred to a patient who had been subject to tic douloureux and who had been more than once cured of his pain by croton oil [Bell's remedy, introduced from India in 1825], having died last autumn. There was no disease in the nerve, but ulceration was found in the mucous coat of the ileum. But then it is said in the report conveyed to me that he had been too powerfully dosed with this medicine. I take the facts either way; the ulceration was the cause of the tic, or the ulceration was occasioned by the medicine. In this last supposition, we have the important admission, that croton oil improperly used, will act on a portion of the mucous coat to the formation of ulcer. Could we depend on this reasoning, it would explain how the better regulated administration of the medicine did, in very many cases, affect a portion of the intestine to the removal of morbid irritation there.[12]

I cannot refrain from giving a quotation Corson discovered in the works of Charles's celebrated brother John, for it applies as truly now as it did then:

When your opinion is called for, pronounce it boldly; and say, if you think it right to say so, "This limb must be cut off." But when you are prevented by officious relatives or if the patient should refuse his consent, when the accidents of the case interrupt you, or you are in a confused or dangerous camp, where operations cannot be done, then do what remains of your duty—not with ill humor of a man thwarted in some little view, or smarting under the sense of a disappointment or affront—set yourself heartily and kindly to save your patient's limb and his life.[13]

11. Bell, John, and Bell, Sir Charles: The Anatomy and Physiology of the Human Body, Containing the Anatomy of the Bones, Muscles, and Joints, and the Heart and Arteries by John Bell; and the Anatomy and Physiology of the Brain and Nerves, the Organs of the Senses, and the Viscera, by Charles Bell, New York, Collins & Co. **2**, 1822.

12. Bell, Sir Charles: Practical Essays, Edinburgh, MacLachlan, Stewart and Co., 1841.

13. Corson, E. R.: John Bell, surgeon, 1783-1820, Bull. Johns Hopkins Hosp. **23**: 241-250 (Aug.) 1912.

Medical Social Problems.—One can still find physicians who take the view that medical social work concerns only the poor and friendless. They forget that such work is not concerned with charity or spiritual welfare, as is that performed by the church. The social problems in private practice are as numerous and frequent as in hospital practice and are often more complex and difficult to correct. This is because the higher the social order of the patient, the more complicated the social issues and intricacies of life are apt to become. To appreciate this, one only has to think of the greater complexities arising in the life of a person with servants, children in private schools, many friends and multiple social, professional and business obligations, as contrasted with the life of a day laborer; yet both may be confronted with basically the same medical social problems.—Minot, G. R.: Medical Social Aspects in Practice, *Arch. Int. Med.* **54**:1 (July) 1934.

CLINICAL FEATURES OF EPIDEMIC (ST. LOUIS) ENCEPHALITIS

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The epidemic of acute encephalitis that made its appearance in the St. Louis area in the late summer of 1933 marked the first appearance in the United States of this disease in epidemic proportions. It is known that isolated cases appeared in many other localities, and a small group of cases appeared in Paris, Ill., in the preceding year. Epidemics of encephalitis had been occurring in Japan for nearly ten years, and descriptions of the Japanese cases seemed to fit the clinical picture of the St. Louis disease. But it is now thought that the Japanese disease was due to a virus immunologically different from the virus recovered in the St. Louis cases. This consideration will convey an impression of the surprise and uncertainty which clinicians felt when confronted with this clinical picture in the days before the disease became widespread and recognition became easy.

The symptoms of encephalitis were, of course, easy to recognize, but the previous epidemic of lethargic encephalitis left impressions that were not recalled by the present disease. Apart from lethargic encephalitis, there had occasionally been seen a solitary case of encephalitis during the past ten years, which may, perhaps, have been identical with the epidemic encephalitis of the St. Louis type; but such diagnoses were considered to apply to cases of doubtful nature and no pathologic studies had pointed to a similar origin.

It is our purpose in this paper to point to the most common symptoms and signs and to the most striking combination of these, so that if and when the disease reappears physicians may be familiar with these salient features and take steps to organize a cooperative enterprise for the study and control of the disease in their respective communities.

Known to be caused by infection by virus, this disease has as yet not revealed its mechanism of origin and transmission, and there is much still to be done by epidemiologists, just as there is still much to be learned about the immunology and treatment.

It has been customary in the past to emphasize the feature of tropism or the selective aggressiveness of virus. Thus, the virus of influenza is spoken of as having a pneumotropic tendency, the virus of rabies a neurotropic activity, and so on. There is no doubt that the virus of St. Louis encephalitis had an almost exclusively neutropic activity; but enough involvement of organs remote to the nervous system was observed to indicate that the virus was capable of producing damage in other parts. The portal of entry into the body is not certainly established, but the experimental evidence points to a probable route through the upper nasal passages directly into the brain. The lesions in the lungs and in the duodenum, though not common, have been regarded as due to migrations of the virus already in the body rather than to reactions produced at places of entry.

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Read before the Section on Practice of Medicine at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

The present description is based on observation of 215 cases seen at the Firmin Desloge Hospital and St. Mary's Hospital. In one of these hospitals the patients were subjected to one form of treatment; in the other, many forms of treatment were employed, because the patients were cared for by many physicians working independently. In both instances a busy house staff struggled gloriously to keep records and observations up to a standard.

Standing at a distance, one may now visualize a disease acute, febrile and encephalitic from beginning to end. Other diseases may have encephalitic features. Malaria, syphilis and typhoid may present signs of irritation of the brain, but this disease was always and chiefly encephalitis.

The onset was usually abrupt, even though one or two days may have been required to establish prostration. The onset was with pain in the front and top of the head, dull, constant, compelling and often stupefying pain. The fever was prompt in its appearance. The conjunctivae were reddened and the neck was almost invariably stiff. This should be visualized as the picture, even though minor variations may detract from the accuracy of the portrayal.

Thus, for example, some cases seemed to have presented a period of upper respiratory infection or even gastro-intestinal disorder such as diarrhea, for several days or even weeks before the onset of encephalitis. But the average patient had no preceding illness.

The infection seemed to declare its predilection for the brain at once. Fever continued to attend the development of the intracranial lesions, and the peripheral manifestations of these lesions completed the clinical picture. The manifestations of the disease as it affected the brain were both psychiatric and neurologic. After a period of twenty-four hours of severe headache the patient soon betrayed the severity of the lesion in the brain. He settled back in dull, stuporous discomfort, awaiting the abatement of the inflammation, or became confused, mildly delirious and, finally, comatose.

Added to this were the manifestations of neurologic nature, patterned by the extent and intensity of the development of cerebral inflammation. The suppression of cutaneous reflexes was conditioned by the degree of mental occlusion. The existence of abnormal responses to stimulation, such as the Babinski and kindred signs, was encountered very frequently. At the same time cranial nerve involvement was infrequent and interference with functions such as swallowing was found only in the fatal types. Abnormal pupillary reactions to light as well as generalized muscular spasticities and tremors with attending aching of these areas were the usual occurrence.

If abdominal pain, nausea and vomiting were complained of, these complaints were not a matter of surprise, occurring as they did in about 20 per cent of the cases. Perhaps the inflammation of the duodenum occasionally seen at autopsy has an explanatory connection.

An influenza-like pneumonia was common in all the fatal cases. Retention of urine was naturally frequent in a disease in which stupor was so common.

The fever was not of a type that lends itself to popular description. In any epidemic, the cases that terminate early most likely present the purest expression of febrile effects. If this is true, the fever curve of epidemic encephalitis spans four or five days, is sustained and is without remissions. In many mild cases, however, remissions occurred, with some relief from symptoms as well, followed in a few hours by the previously high temperatures. The peaks usually reached levels of 103 to 105 F. In those cases in which the disease and its fever were protracted, it still seemed possible to detect a tendency to relief at the fourth or fifth day.

In this connection the leukocytosis is interesting. In the simple cases of short duration, no disturbance was noted in the number and kind of leukocytes. But in the cases that were prolonged, leukocytosis was common, the commonest level being between 10,000 and 15,000 cells per cubic millimeter. Even at this level there were no significant qualitative changes. Since so many of the patients were adults between 50 and 70 years of age, with numerous concomitant infirmities and disorders, this irregularity in the number of leukocytes may perhaps be taken as representing the influences of factors other than those due to the encephalitis.

The other examination made in the laboratory which is of diagnostic meaning was the examination of the spinal fluid. This fluid was usually under little or no increase in pressure. The globulin was present in the spinal fluid in 70 per cent of the cases in this series. The large majority of cases showed increases in the amounts of sugar to levels between 60 and 100 mg. Nearly all fluids presented an increase in cells, the greatest number showing counts between 50 and 100 cells. Ninety per cent of these cells were lymphocytes. In a series of ninety-nine cases so examined, a tabetic gold curve was encountered in eighty-seven cases. There were no other laboratory tests of importance.

The average patient was well in ten days. In the comprehensive report of the Metropolitan Health Council, covering a study of 986 patients who were treated in hospitals, recovery is described as surprisingly rapid and complete. While the devastating sequelae not infrequently seen after lethargic encephalitis did not follow this type of encephalitis, nevertheless a survey made by one of us (G. O. B.) revealed a surprising amount of minor disabilities, which in the vast majority of cases did not prevent the patient from returning to work or to school. Among their disabilities, muscular instability, "shakiness" and a tendency to headache were the most common.

In children, the disease presented a milder display of symptoms and signs, and the death rate was lower. Occasionally, however, a fulminating disease, terminating fatally in forty-eight hours, was seen. In general, the disease was as easily recognized in children as it was in adults.

As for differential diagnosis, it was emphasized in the beginning that, if the entire pattern of the disease was considered, it would be seen that the chief confusion lay in differentiating an encephalitic "episode" or "phase" of a disease like malaria, typhoid or syphilis from this type of encephalitis. The data obtained from the laboratory, viz., the finding of plasmodia, the occurrence of a positive test for syphilis or the discovery of a positive Widal test or blood culture, were the points on which differentiation rested. It would be more difficult to separate this disease from lethargic encephalitis. However, in all cases the serum of a patient with this type of epidemic encephalitis will contain protective substance against the lethal dose of known infected material when injected simultaneously in the cranium of a white mouse. This is the final and best test. By this test this disease has been said to be distinguished from the disease that occurred in Japan.

The death rate in the 786 cases studied by the Metropolitan Health Council, including the 215 cases

embraced in this report, was within a decimal point of 20 per cent. A study of the mortality rates in different groups is valuable in discussing the treatment.

Many types of treatment were employed. In private hospitals particularly patients were treated according to the various concepts of the problem which many and various physicians entertained.

Besides symptomatic relief, patients received mercurochrome intravenously, transfusions of blood, and even intravenous injections of spinal fluid. The items of treatment that were constantly indicated were: 1. Spinal puncture for diagnostic purposes and for the relief of headache. A second spinal puncture usually did not relieve headache. 2. Administration of fluids, usually under the skin. 3. Administration of liquid food, by nasal tube, if necessary. 4. Absolute rest and, if necessary, sedation by morphine. The best treatment consisted in placing the patient in a darkened room, free from noise and free from too frequent ministrations by nurses or doctors. Then the essential features of treatment as outlined were observed. In a series of 129 cases treated exclusively after this plan at Firmin Desloge Hospital, the death rate was only 12 per cent, and the age distribution and the number of severe cases in this group were identical with the other groups in the total number of 786 referred to.

The chief lesson we learned of the treatment of epidemic encephalitis was that the lowest death rate attended the most conservative treatment.

Beaumont Building.

ABSTRACT OF DISCUSSION

DR. J. P. LEAKE, Washington, D. C.: I hardly think that this can be just the same disease as the encephalitis of von Economo, which was prevalent from 1918 to 1923. It is a more acute affair and has much less in the way of sequelae. In the outbreaks in Japan, particularly those of 1912, 1919, 1924 and 1929, physicians are indebted chiefly to Dr. Webster and his colleagues of the Rockefeller Institute for neutralization results. It is true, as Dr. Kinsella said, that the neutralization tests were negative with serum obtained from Japan, which would indicate that these Japanese cases were of possibly a different strain. However, the clinical and epidemiologic characteristics of those epidemics are so nearly the same as what occurred within the St. Louis area and radiating from there, that that result will have to be taken under consideration. Dr. Armstrong of the National Institute of Health has also conducted neutralization tests and will not report until he has completed and checked from what source the serum comes. The Japanese serum did not come in question here. It is possible that serum obtained from such a distance may lose its neutralizing properties. Dr. Kinsella has spoken of a remarkable low death rate, 12 per cent. It may well be that that was due to careful handling and, as he says, absence from too much therapeutic interference. It would seem that the results as a whole in St. Louis might have been influenced by the way the cases were handled. About 95 per cent of all the cases in the epidemic in St. Louis City and County, 1,100 cases, were hospitalized. That is due to the recommendations and assistance of Dr. Brady and Dr. Sante, the assistant health commissioner of St. Louis City, and health authorities of St. Louis County and Dr. Musser of the state board of health. The isolation was only for three weeks, which, although cases might be considered a source of spread of infection, as the epidemiology showed, was not of great importance. There were relatively few multiple cases in one household. Still it did keep the patients quiet and under good medical attention. The largest death rate from the epidemic in Japan was 50 per cent in 1924 and 57 per cent in 1927. In the epidemic in Paris, Ill., the year before the St. Louis epidemic, the death rate was 37 per cent. In St. Louis as a whole it was only 20 per cent. It is possible that low result was due to that method of handling. The great proportion of the cases of von Economo did present some sequelae and those sequelae were largely of an organic type. Parkinsonian or behavior disorders were prominent. Those things didn't occur after the epidemics in Japan, St. Louis and Paris, Ill. It is too early to speak with great certainty about the St. Louis epidemic. In going over the Paris, Ill., cases fifteen months later, however, there was a notable absence of such sequelae. Those that Dr. Kinsella mentioned were more of the neurasthenic type. Only 1.8 per cent of the cases in Yokohama, Japan, showed any sequelae within twelve months.

ENDOCRINE DWARFISM

WILLIAM ENGELBACH, M.D.
AND
ROBERT L. SCHAEFER, M.D.
DETROIT

The problem of diagnosis and treatment of statural undergrowth, or dwarfism, rightfully belongs to the general practitioner and pediatrician. One has but to study the normal growth increment curve in the human

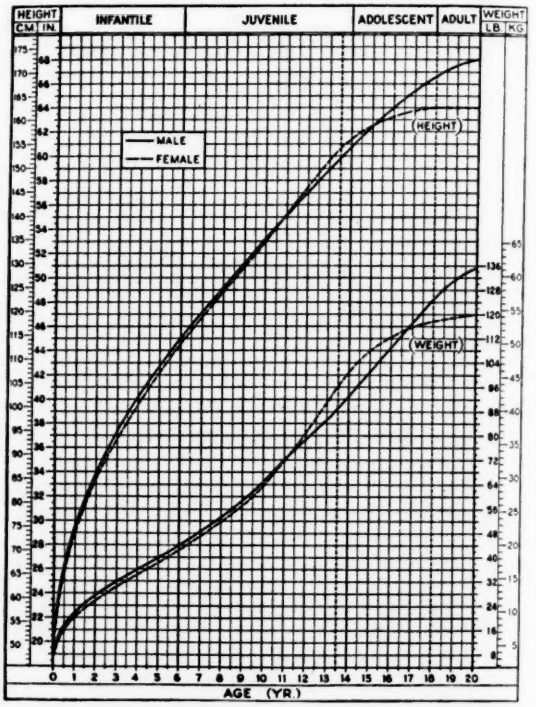

Fig. 1.—Optimal height-weight curves.

being for this proof. It testifies to the fact that approximately 50 per cent of the total growth has been attained at the age of 3 years. Its increasing plateau diminishes rapidly as adolescence or sex maturity is attained. It logically follows that diagnosis and adequate treatment during the infantile and early juvenile periods should give greater therapeutic results.

There is an abundance of experimental evidence that the factor concerned in somatic growth is produced by the eosinophilic cell of the anterior lobe of the hypophysis. By this is meant that every structure of the body, from an individual cell to the constitutional whole, is involved.

The three postulates of hormonology, the therapeutic side of endocrinology, are completely fulfilled in the

This work was initiated previous to the death of Dr. Engelbach, Nov. 22, 1932.
Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

laboratory. This is demonstrated by the fact that immature animals are dwarfed by hypophysectomy. Adequate replacement therapy in their instance will again bring about normal growth. An excess of this substance given to normal animals is capable of producing gigantism or acromegaly.

Of more interest to the profession and just as convincing is the clinical proof adduced from two abnormal pictures, both due to an eosinophilic adenoma of the anterior lobe of the hypophysis. The first is that of gigantism in which the hyperfunction occurs before adolescence, or epiphyseal closure, resulting in proportionate gigantism. The second is that of acromegaly due to a similar hyperfunctioning adenoma that occurs after adolescence and, consequently, after epiphyseal closure. The overgrowth, then, does not result in a statural increase in height but effects those bones which derive their growth from the periosteum, such as the bones of the face and vertebrae.

Evans and Long in 1921 first recognized and demonstrated this hormone. Their preparation was a saline suspension of finely ground anterior beef pituitaries. Since then improvements in preparation and extraction of this hormone have been made. Putnam, Teel and Benedict in collaboration with Bugbee, Simond and Grimes salted out the protein fraction and demonstrated that the growth principle was contained in it. This precipitate was dissolved in two-hundredths normal sodium hydroxide. Butyl alcohol was added as a preservative. It is gland specific, never having been obtained from any other tissue. It is not entirely thermostabile.

The results reported were obtained with the injections of such an extract.[1] Injections of 2 cc. three times a week were given intramuscularly. No untoward results were at any time noted.

As indicated in table 1, originally seven cases were selected as being suitablefor treatment after a diagnostic survey had been done to rule out nonendocrine disease so far as possible. No alteration in diet was suggested. These patients were selected from families who were capable of furnishing an adequate diet. The individual protocols are detailed in our preliminary report.[2] In the gross, their histories over a protracted period of time suggested a stationary or very minimal growth. To reemphasize, this table also reveals that they were under a control period of from two to six months, during which time no increase in height was noted except in case 5, and this was only half an inch. To rule out the specificity of thyroid extract as being capable of producing growth, four of the seven patients exhibiting signs of hypothyroidism were given thyroid extract to tolerance during this period of control. The recent work of Smith[3] demonstrates that immature animals dwarfed by hypophysectomy grow more rapidly if thyroid extract is given in combination with the

TABLE 1.—*Endocrine Growth Development: Favorable Response*

		Before Treatment									After Treatment			
		Age		Actual Height, Inches	Normal Variations: Minimum Inches	Normal Variations: Maximum Inches	Length of Control Period, Mo.	Change in Height During Control Period	Osseous Development	Type of Deficiency*	Duration of Treatment, Mo.	Height, Inches	Gain in Height, Inches	Comment
Case	Sex	Yr.	Mo.											
1	♂	13	6	55.0	57.8	61.8	4	None	Normal	—P	3	56.5	1.5	B. M. R., 0%
2	♀	15		58.7	60.4	64.6	2	None	Slight advance	—TP	3½	59.7	1.0	B. M. R., —12%
3	♂	11		47.5	53.3	57.1	3	None	Delay 4 years	—TP	4½	50.2	2.7	No B. M. R.; marked subjective improvement; chondro-epiphysitis
4	♀	9	5	42.7	50.1	53.7	2	None	Delay 3 years	—TP	3½	44.2	1.5	Marked subjective improvement; chondro-epiphysitis; enlarged thymus
5	♂	18	6	52.5	64.9	69.3	5	Gain of 0.5 inch	Delay 3 years	—PT	5	55.7	2.7	B. M. R., —20%
6	♂	14	7	52.0	59.5	63.7	2	None	Delay 2 years	—PT	3½	54.7	2.7	B. M. R., —10%; mentality improved
7	♀	7	4	36.7	45.2	48.4	6	None	Delay 1 year	—P	3	38.5	1.8	B. M. R., —7%

* —P denotes hypopituitarism; —TP, hypothyropituitarism, and —PT, hypopituitarothyroidism.

TABLE 2.—*Endocrine Growth Development*

	Age			Actual Height Before Treatment, Inches	Duration of Treatment, Months	Present Height, Inches	Gain in Height, Inches	Osseous Development	Comment
Case	Yr.	Mo.	Sex						
3	12	6	♂	47.5	15½	52.2	4.7	Advance	Improvement of chondro-epiphysitis; improved generally; more alert attitude; increased activity; improvement in gait
4	10	9	♀	42.7	14	46.0	3.3	Advance	Marked general mental and physical improvement
5	20	4	♂	52.5	15½	59.0	6.0	Not reported	Improved generally; increased appetite and activity
7	9		♀	36.7	14	40.5	3.8	Slight advance	Improved generally; more alert; more active; increased appetite; excellent health past year

1. The therapeutic agent used in this study was Antuitrin-G. This is a product not yet commercially available and was supplied to us by the Research Laboratory of Parke, Davis & Co. for a preliminary research test. The letter G is used to differentiate the growth from the sex factor.

2. Engelbach, William; Schaefer, R. L., and Brosius, W. L.: Endocrine Growth Deficiencies: Diagnosis and Treatment, Endocrinology **17**: 250 (May-June) 1933.

3. Smith, P. E.: Increased Skeletal Effects in A. P. Growth-Hormone Injections by Thyroid in Hypophysectomized, Thyroparathyroidectomized Rats, Proc. Soc. Exper. Biol. & Med. **30**: 1252 (June) 1933.

growth hormone than those animals dwarfed in the same manner and treated with the growth hormone alone.

Patients 1 and 2 exhibited no further growth after their initial stimulation, although treatment was carried on for a considerable period of time. They displayed a normal or advanced roentgenographic study of osseous development. They were at or approximating adolescence or sex maturity. This study of the normal growth increment curve reveals that epiphyseal closure and sex maturity are coincidental phenomena at this epoch of life. This suggested that there is an antagonism between the sex and growth hormones of the anterior lobe of the hypophysis. This belief is further substantiated clinically in patient 2, in whom normal rhythmic periods had been established at 12 years and continued to 15. The administration of this substance produced two periods of amenorrhea. In an additional case, not cited in the table, a male dwarf, aged 32, displaying normal libido and potentia, became temporarily impotent during his period of treatment. It is our theory that epiphyseal closure is dependent on gonadal development and consequent hormone function.

In case 6 there was a moderate genital aplasia, and roentgenographic study for osseous development showed retardation. His growth of 2.7 inches was termed a favorable response, but further cooperation could not be obtained and treatment necessarily was discontinued.

Four cases outlined in table 2 have been under treatment continuously for over a period of from fourteen to fifteen and one-half months. The increase in statural growth was from 3.3 to 6 inches. All of the patients received thyroid extract in therapeutic doses together with the growth substance with the exception of patient 7, who received the growth substance alone.

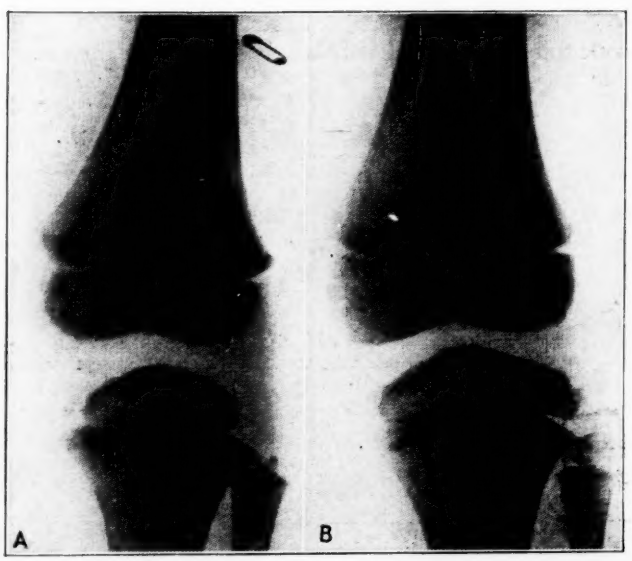

Fig. 2 (case 3).—Condition of knee: *A*, before treatment; *B*, fifteen and one-half months after treatment.

COMMENT

If one bears in mind the control period of observation without treatment and the history of a lack of growth over a long period of time, it is not unwarranted to assume that the therapeutic response has been due to the specific medication administered. These four cases all demonstrated a definite retardation in roentgenographic studies for osseous development, the delay varying from one to four years. Nine out of sixteen cases observed, in addition to the delay in osseous development, presented another significant roentgenographic finding. This has been previously termed chondroepiphysitis. It is more or less generalized, involving from a few to all of the developing epiphyses and osseous centers. This is characterized by a fuzzy, ragged, poorly outlined appearance together with decreased bone density. Treatment produced an advance in osseous development, as can be seen in figure 2. The abnormal appearance of these developing osseous centers has almost approached the normal. Figure 3 was diagnosed roentgenologically as Köhler's disease, a similar type of disturbance involving the scaphoid and tarsal bones of the ankle. The comparative roentgenograms after treatment revealed a complete return to normal. This suggests the possibility that Köhler's disease, Osgood-Schlatter's disease, Perthes' disease and similarly allied conditions showing these chondroepiphyseal changes in the growing child are not inflammatory in character but are due to an incretory imbalance.

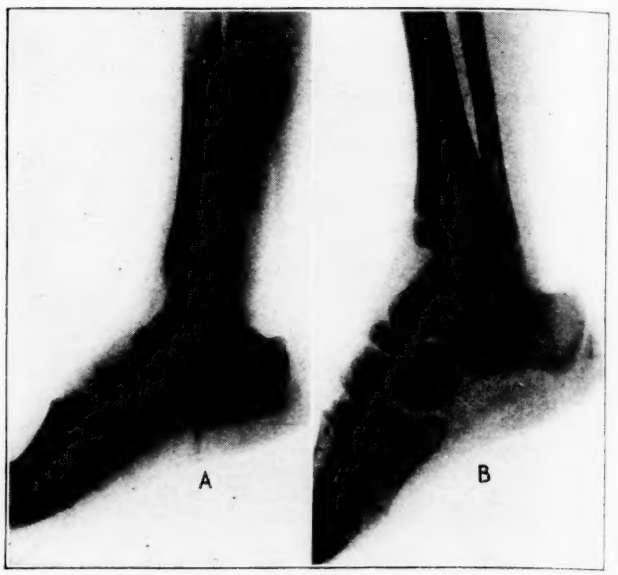

Fig. 3 (case 3).—The ankle: *A*, before treatment; *B*, after treatment.

These cases have recently displayed little or no further growth during a period of from three to five months, although the same dosage and number of injections were employed. This was rather disconcerting, but biologic assay revealed that the material we had been using over this period of time had lost its potency entirely. We are prone to view this as additional evidence that previous stimulation was entirely specific and, in addition, that this extract is not thermostabile. It should further serve as another period of control without treatment.

SUMMARY

1. To secure results, diagnosis and treatment of dwarfism should be made early.

2. The extract employed does contain the growth hormone.

3. The work of Smith indicates that thyroid extract is a valuable adjunct in this form of treatment.

4. The cases giving the most favorable response displayed a delay in roentgenographic study of osseous development.

5. Sex maturity and epiphyseal closure, coincident phenomena, preclude further stimulation of statural growth.

6. The chondro-epiphyseal changes described are not uncommon in this type of individual, and it is suggested that they are not inflammatory but endocrine in origin.

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ABSTRACT OF DISCUSSION

DR. ROY G. HOSKINS, Boston: Such a study as this is beset with difficulties. The first is the nuisance of the needle. Another is the uncertainty of potency and composition of the growth preparations now available. A third is the propensity of growth to occur in spurts at different ages in different individuals. The interpretation of the data necessitates consideration of this growth spurt—the possibility that it has been delayed and would have occurred spontaneously without any medication whatever. As a revulsion from the disgraceful shotgun pharmacy that has been employed a great deal in endocrinology, the feeling has grown up that an attempt should be made to reacquire some sort of scientific chastity and use only one hormone at a time. But in the treatment of growth deficiency by pituitary extracts, the thyrotropic and the suprarenotropic principles must be used in addition to the growth hormone. Insistence on single gland medication in such cases is a sort of fetishism. In the practical management of these cases, different preparations that may be effective should be used. That is indicated, among other things, by the fact that after a while a resistance to any one preparation may be built up. The patients cease to react so well, or they may cease to react at all to the growth preparation. The explanation probably lies, as demonstrated, in new work at Collip's laboratory which suggests that the use of these hormone preparations induces in the body the production of antihormone substances; hence, after a time the material ceases to be effective. In cases such as Dr. Schaefer reports it is desirable when "growth extract" begins to be ineffective, to shift to thyroids and then

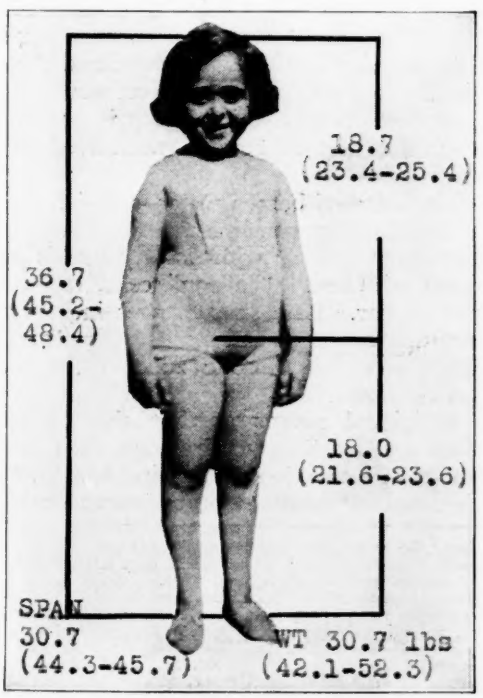

Fig. 4 (case 7).—A girl, aged 7 years 4 months. Measurement of head, 18.5 inches (20.3 optimal); chest, 19.5 inches (22.7 optimal); abdomen, 19 inches (20.5 optimal).

perhaps to glycerine extract of suprarenal cortex. The underlying physiology of Dr. Schaefer's study is important. The work of Lee is making it appear that the pituitary growth hormone is the regulator of protein metabolism *par excellence*. The nonprotein nitrogen of the blood seems to vary with the use of the growth hormone, as does the sugar of the blood with the use of insulin. Recent work in Collip's laboratory shows also that there is a very important relationship of the "growth hormone" to calcium metabolism. Speaking now from the standpoint of endocrinology in general, I hope that Dr. Schaefer and others pursuing this type of research will have the time and the inclination to make careful studies of the psychology of the situation. The human being is not

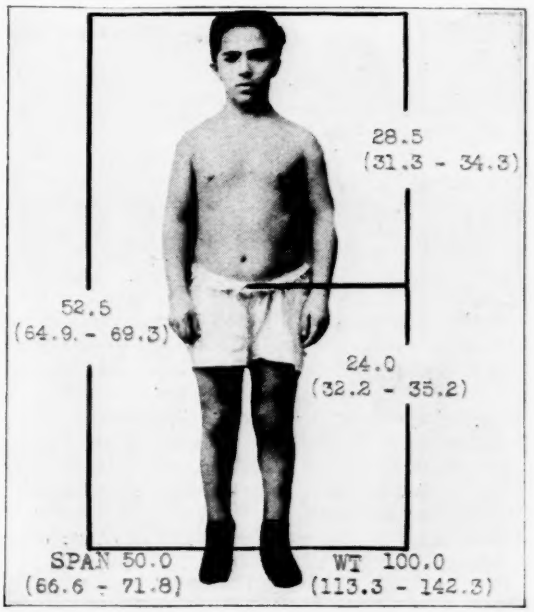

Fig. 5 (case 5).—A youth, aged 18 years 6 months. Measurement of head, 21 inches (22.4 optimal); chest, 29.5 inches (34.1 optimal); abdomen, 29.7 inches (28.4 optimal).

merely a collection of viscera and of interest, therefore, only as a physiologic specimen. The thing that gives meaning to this collection of viscera is the personality of the individual. The most difficult phase of endocrinology and one that now especially demands serious research is the effect of various hormones on personality and mentality.

DR. MURRAY B. GORDON, Brooklyn: In a recent study of about 1,000 children from the point of view of mentality, there were 529 with endocrine disturbances, and of these forty-seven were instances of anterior pituitary deficiency of growth. The children in this group were the most intelligent of the entire endocrine group. Nineteen per cent of those with anterior pituitary deficiency showed mental retardation, as against 97 per cent in childhood myxedema and 36 per cent in other pituitary conditions. In a developmental study, normal children with anterior pituitary deficiency of growth began teething at 9.3 months, walking at 15.06 months and talking at 16.97 months. In other words, a child with anterior deficiency of growth and normal mentality will teeth, walk and talk later than one with adiposogenital dystrophy and thyropituitary obesity but probably not earlier or later than one with hypothyroidism. A child with mental retardation and anterior pituitary deficiency will teeth and walk later than one with any other endocrine condition with exception of childhood myxedema and marked instances of hypothyroidism. There were several points not covered in the differential diagnosis between hypothyroidism and anterior pituitary deficiency of growth. In hypothyroidism, the outstanding features are delayed carpal development, low basal metabolic rate and high blood cholesterol. In anterior pituitary deficiency the specific dynamic action is lowered or absent, the basal metabolic rate may or may not be lowered, depending on the involvement of the thyrotropic hormone, and blood uric acid and blood chlorides are high in values. With regard to the general treatment of anterior pituitary deficiency of growth, I must confirm the statement of Dr. Schaefer and Dr. Hoskins that how much of the increase in growth following combined treatment is due to the thyroid extract and to stimulation of the thyrotropic hormone of the anterior pituitary

gland is not known. It has been found empirically for the past twenty years that many patients with anterior pituitary deficiency, thyropituitary obesity or adiposogenital dystrophy did much better when thyroid extract was given in conjunction with pituitary preparations. I now feel that this was due to stimulation of the thyrotropic element of the anterior pituitary gland. As to the question of treatment in mental retardation, I found that 66 per cent of the patients in the anterior pituitary deficiency group showed an improvement in the mental condition.

DR. ROBERT L. SCHAEFER, Detroit: There are fallacies in every human growth increment curve. It was shown only to emphasize the fact that diagnosis in endocrine statural undergrowth should be made before sex maturity or the coincident thing, epiphyseal closure. It stands to reason that, if epiphyseal closure has been effected, no increase in statural height can be attained. If the growth hormone is then given and is of sufficient potency, the therapeutic result would be an abnormal one. Those osseous structures which derive their growth from the periosteum would be stimulated; in other words, a state resembling acromegaly might be produced. Glandular interrelationship, as Dr. Hoskins has pointed out, is a broad subject. While considerable of definite clinical value is known, it cannot be discussed in brief. As to the psychologic aspect, such as mental retardation, none of these cases displayed any signs. They were all normal mentally, two bordering on precocity. That there is a definite relationship between the pituitary and thyroid, I believe. In study of the hypopituitary type of individual over a period of years I have very often seen that he is born with a normal mentality but that as the pituitary failure advances and the subthyroid factor becomes more pronounced mental retardation will intervene unless adequate treatment is given.

DIAGNOSTIC FACTORS CONCERNING HERPES ZOSTER OTICUS

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Many otitic and intracranial conditions are simulated by the various manifestations of herpes zoster oticus. It may therefore not be without interest to review its etiology and pathogenesis up to the present, indebtedness to the pioneer studies of Ramsay Hunt,[1] Frank Dennis [2] and W. H. Sears,[3] being kept in mind

Knowledge of the nature and effects of the herpetic virus has lately been amplified by extensive immunologic study. It seems now pretty well agreed that the infectious agent is a filtrable virus, entering probably by the nose or nasopharynx, not by the skin.[4] This specific pathogenic agent becomes localized simultaneously in ectodermal structures—the skin and mucous membrane—and in the tissues of the sensory nervous system. It may travel from the cortex to the periphery or vice versa, vaccinating the neural structures along which it travels, which serve as its culture medium.

Theories of the pathogenesis of herpes zoster have entirely changed; it is no longer considered to be a ganglionitis alone but rather an ascending or descending infective process due to a specific filtrable virus with definite serum reactions and antibody production.[5] In the affected nerves, lesions ranging from inflammation to hemorrhage and actual necrosis are found not only in ganglionic structures but also along the nerve sheaths to the periphery, and ascending even into the medullary nuclei; some report involvement of the cortical region concerned.[6] Histologically, the external manifestations observed are lesions of ectodermal structures due to selective action of the virus on the peripheral sensory neuron.[7]

Predisposing factors seem to include excessive heat or cold, exposure, severe physical trauma, nervous shock or exhaustion, and sudden loss of endocrine equilibrium. Granulomatous ailments such as tuberculosis and syphilis seem to increase the vulnerability of peripheral neurons to the specific toxin of this disease.[8] It has been suggested that chronic septic states caused by long-standing colonic stasis, cholecystitis, dental apicitis or nasal sinusitis may similarly facilitate meningeal invasion by the herpetic virus.

Certain recent work in immunity raises the question of the transportation of this virus by connective tissue phagocytes (histiocytes), themselves not injured by its effects, along meningeal lymph channels or tissue spaces, but this has not yet been demonstrated.

Much discussion has taken place concerning the alleged kinship of the virus of chickenpox with that of herpes zoster, the latter being predominantly a disease of mature individuals.[9] Some consider herpes zoster to be due to the reactivation of a latent chickenpox virus by added toxic or infective stimuli. But zoster is not contact transmissible, nor does previous varicella immunize against herpetic disease. While Goodpasture and Teague [10] in 1923 decided that zoster was merely a virulent form of simple herpes, Levaditi and most of the recent investigators, including Olitsky of the Rockefeller Institute, are convinced that herpes zoster is due to a specific and distinct virus.[11] So far, it has not been inoculable into animals or man, while herpes simplex may be readily transferred by special methods.[12]

The skin lesion of herpes zoster, a vesicle, resembles that of smallpox but contains more exudate; it is due to intercellular edema with local necrosis and the appearance of Unna's "balloon" cells, large, swollen and multinuclear. Late skin changes include a thickened stratum corneum and proliferation of pigment cells, with depressed fibrotic zones when secondary infection has occurred.[4b]

The peripheral nerves at first show lymphocytic infiltration and small hemorrhages in their interfibrillary spaces. So-called oxyphilic inclusions—"herpetic bodies"—are later found along the nerve sheaths, with

From the Department of Otolaryngology, University of Oregon Medical School.

Read before the Section on Laryngology, Otology and Rhinology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

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12. Olitsky, Cox and Syverton.[11] Kumer, L.: Ueber zosteriformen Herpes, Wien. med. Wchnschr. **83**: 746 (July) 1933.

myelin degeneration, followed by regenerative changes on recovery.[13]

The sensory ganglions show both interstitial and periganglionic round cell infiltration, occasionally with necrosis arising from severe congestion. Later, chromatolysis with atrophy, vacuolization and disappearance of ganglion cells may occur, followed by fibrotic capsular proliferation. The axon cylinders may become swollen to ten or fifteen times their normal size. Still later, fibrous changes occur, with histiocytes and fibroblasts carrying on the work of repair. Similar changes are found in the nerve roots and meningeal coverings involved. Postmortem reports on a few cases complicated by facial palsy disclose wallerian degeneration, especially below the geniculate ganglion, and, possibly owing to a retrograde process, involvement of the seventh nucleus has been found.[14]

Symptoms and signs, in addition to vesicle formation (which may be limited to the posterior wall of the external auditory meatus or to one or two small lesions on the concha or mastoid), include pain, which may rarely disappear on drying of the vesicles but usually lasts weeks, occasionally months; an enlarged preauricular lymph node (occasionally mastoid, cervical or parotid); loss of local tactile sensibility; and sometimes vesicles on the anterior two thirds of the tongue, the anterior pillar or soft palate of the same side. Facial paralysis may supervene four or five days after, rarely coincidental with or preceding the eruption. Extensiveness or depth of vesiculation has nothing to do with the advent of paralysis. Pain accompanying facial palsy should always suggest herpes zoster.

Vestibular and auditory symptoms—moderate vertigo, slight deafness or buzzing noises—may precede the eruption by several days or appear simultaneously. Transitory in character, the dizziness is usually more annoying than the hearing disturbances.

Various combined nerve involvements have been reported: both facial and auditory nerves; one branch of the fifth; the first cervical, and, rarely, one intercostal nerve along with various cranial divisions.[15]

REPORT OF CASES

Classification of the symptoms may perhaps be facilitated by brief reports of three typical cases recently observed:

CASE 1.—A woman, aged 36, somewhat neurotic, had noticed for two days a slight tingling and itching of the inner surface of the concha and posterior rim of the external meatus. Slight serous discharge had followed rubbing of this area with cotton. She complained of a slight buzzing in the ear but no loss of hearing. Seven herpetic vesicles, either drying or with their tops rubbed off, were found at the junction of the concha and the external canal, two being just inside. The posterior half of the tympanic membrane was slightly pinkish. These lesions healed in two days with dithymoldiiodide dusting powder.

CASE 2.—In a robust man, aged 42, accustomed to outdoor work, the condition came on forty-eight hours after severe exposure of his hatless scalp for an entire day to the summer sun. The next day he complained of some headache but kept on with his unusually heavy work. That night his headache became so violent that he became irrational, with a temperature of 101.6 F., requiring restraint and hypnotics. Before the latter could take effect, however, thorough cocainization of both sphenopalatine areas of the nose was done, because of the retro-auricular localization of the pain. This gave him immediate relief, and he became quiet and tractable. Hearing was but slightly affected, although both tympanic membranes were pink. There was marked dizziness, however, with spontaneous rotatory nystagmus on abduction to either side; this was almost gone in forty-eight hours more. There was marked venous engorgement of both optic disks at first, disappearing after the first day. No herpetic vesicles were found on the anterior surface of either pinna or within the meatus; however, both ears showed a crop of from twenty-five to thirty vesicles over the back of each pinna, with three on the skin over the left mastoid. Additional herpetic vesicles were noted on the right ala nasi, about both angles of the mouth, and on the right side of the soft palate. Hearing loss or facial asymmetry was not noted at any time.

After rapid saline purgation and the local use of alcohol-acetone solution of metaphen 1:200, with daily shrinkage of the sphenopalatine regions, the vesicles were gone in three days, and the patient went to work after eight days.

CASE 3.—A woman, aged 45, referred by the medical and neurologic services in Multnomah Hospital for diagnosis, had been having a temperature of from 101 to 102 F. for several days, with swelling and tenderness back of one ear suggesting erysipelas. Roentgenograms showed slight blurring without loss of trabecular sharpness. The external meatus was almost swollen shut and the tympanic membrane was deep red, but hearing was almost normal. A constant deep boring pain behind the ear had suggested the idea of a fulminant mastoid; there was a history of otitis media in early childhood. After five days the face became paralyzed, remaining flaccid nearly nine weeks thereafter. Synchronous taste disturbances were noted on the back part of the tongue on the same side. But following the palsy, dizziness was the chief complaint for several days; there was also slight and transitory hearing loss, with the Weber test referred to the opposite side.

Several drying vesicles were found on the mastoid skin, behind the swollen concha and along the posterior meatal wall. An intercurrent bronchopneumonia kept her temperature high for ten days. Making the diagnosis of herpes zoster oticus, my service refused either a myringotomy or a mastoid operation. Under use of alcohol-acetone metaphen the skin swelling was gone in two weeks. Pain in the mastoid region running to the top of the head remained a most disagreeable feature for almost twelve weeks.

Here is seen, first, the very mild and superficial affair simulating an eczema; secondly, the furiously severe type with meningeal symptoms, but little local annoyance in spite of very extensive skin lesions in several nerve areas, and, thirdly, dermal manifestations resembling erysipelas followed by facial palsy, with severe mastoid pain and without meningeal symptoms.

I have not seen any of the cochlear-vestibular symptom complexes, often very severe and showing 11 per cent facial paralysis in the French series last reported.[4b] These may show either much deafness, much dizziness, or both.

Based on these four clinical forms, differential diagnosis may be considered from several angles. First, the diffuse and painful swelling over the mastoid, concha and posterior wall of the external meatus, prior to the appearance of herpetic vesicles or after such vesicles have dried up or coalesced into open ulcers, must be distinguished carefully from other causes of similarly painful edema. Obviously, periosteal swelling from mastoiditis will show deep tenderness on pressure of the antrum and blurring of cell outlines in the roentgenogram. Edema from furunculosis, aside from the classic pain on traction of the pinna, will show definite tender swellings within the canal, often anteriorly. Eczema or pyodermia about the canal lacks the severe neuralgic pain of herpes zoster. Erysipelas

13. Rebattu, Mounier-Kuhn, Dechaume, Bonnet and Colrat.[4] Lipschütz, B.: "Herpetischen Zoster?" Kerneinschluss oder Kerndegeneration? Centralbl. f. Bakt. **93**: 361 (Nov.) 1924.

14. Rebattu, Mounier-Kuhn, Dechaume, Bonnet and Colrat.[4] Marinesco,[5] Lhermitte and Vermès,[6] Favre and Dechaume,[7] Lipschütz,[13] Riser and Sol: De la névraxite zostérienne, Encéphale **28**: 380 (May) 1933 (bibliography).

15. Browne.[4] Rebattu, Mounier-Kuhn, Dechaume, Bonnet and Colrat.[4] Pardee.[8]

shows a higher temperature, from 101 to 104, rather than from 99 to 101 in herpes zoster. Its raised, subdermal lymphatic invasion, brawny and reddened, will speedily clear up the diagnosis. But occasionally bullae form over the mastoid or pinna in erysipelas, usually irregular in form, not small rounded vesicles as in herpes zoster. Such eruptions may cause much confusion for a day or two.

Within the auditory meatus, acute eczema or pyodermic lesions arising from fissures may suggest eroded herpetic areas; but the fissure concerned will always be found, after removal of crusts, and no vesicles will be noted on the back of the pinna or mastoid. Lesions from herpes zoster cannot be confused with the red, crusted, intertriginous fissuring of eczema between the pinna and its attachment to the mastoid skin.

Fungoid invasion of the meatal epithelium does not attack the pinna, although eczema, fissuring and erythema caused by the acrid discharge of various ringworm and mold invasions may be momentarily confusing. Musty smelling soft gray masses in trichophytosis or dry and powdery crusts in aspergillosis, filling the lumen of the canal, without vesicular lesions or neuralgic pain, remove any doubt. Myringitis bullosa lacks the characteristic pain of zoster and shows no skin vesicles.[16]

In the absence of middle ear infection, facial paralysis accompanied by severe pain suggests certain remote possibilities. For example, after an accident in which basal fracture or tearing of meningeal vessels has led to hemorrhage about the internal auditory meatus or within the tympanic cavity, facial paralysis may show up hours or even days after the injury, and tension of the dura across the gasserian fossa may produce associated pain of severe degree. But this history of direct violence is almost unheard of in herpes zoster oticus. Exposure, when it is a factor, is usually to sun and wind, during a long motor ride or work outdoors; occasionally this occurs when the patient goes out into sharp weather after some debilitating illness, notably syphilis. The action of chilling of the mucosal surfaces in facilitating invasion through the nose by lowered resistance to the herpetic virus deserves experimental study. Lesions of the seventh nerve from tumors or cysts at the cerebellopontile angle present definite vestibular and ocular symptoms which are constant, slowly increasing and usually painless. Vestibular and cochlear phenomena in herpes zoster are transitory, show up early and are always coupled with pain whether facial palsy is present or not.

When there is doubt concerning the presence of herpetic lesions with facial palsy, it is interesting to recall that Aitken and Brain, following Netter's preliminary studies, have recently discovered a specific antibody in the blood of eighty out of eighty-two convalescent zoster patients.[17] Eight cases of facial paralysis with a history of eruption gave a positive complement fixation to this antibody, while of twenty-two palsies without eruption eighteen gave negative complement reactions, two partially positive, and two positive. From the standpoint of prognosis, since zoster paralyses due to swelling about the geniculate ganglion are almost all transitory, this test seems to afford a valuable aid.

Disturbance of other nerves than the seventh and eighth is uncommon. Nevertheless in those cases of herpes zoster associated with marked meningeal symptoms (the so-called encephalitic type), numerous other nerves of either side may be involved, notably the maxillary and mandibular divisions of the fifth. Thus palatal, nasal and labial herpes may accompany herpes zoster oticus, usually at the start, activated apparently by the same dose of virus in adjacent regions of the medulla. Disturbance of taste without facial palsy and, very rarely, slight involvement of the forehead from the ophthalmic fifth[18] have been reported but are of brief duration. Certain observers bring up the question whether synchronous invasion of motor nerves along with that of the sensory pathways may not occur; but the usual delay of several days in motor symptoms speaks for the generally accepted opinion that such involvement is due to secondary pressure on and infiltration of motor nerves passing through the bony canals, foramina or dural envelops concerned.[19]

Symptoms referred to the brain and meninges—violent, boring or band-like headaches, often with transitory rise in temperature and mental irritability and confusion—may suggest analogies to other diseases of these structures, whenever the early external manifestations of herpes zoster have not been noted. Such conditions include intracranial hemorrhage in hypertension or thrombosis, when blood pressure is low; the prodromal stages of encephalitis or of epidemic cerebrospinal meningitis and invasion by or extension of intracranial neoplasms or abscesses. Urinalysis, blood pressure readings and electrocardiograms may be needed in the first class; lumbar puncture, disclosing pressure, high cell count or turbid fluid, may relieve the acute intracranial pressure pain of meningitis but will not allay the intrinsic neuralgia from swelling of the radicular ganglionic structures in herpes zoster. Similar transitory relief from spinal or ventricular puncture may occur in cases of tumor or abscess in which encephalograms will disclose characteristic deformation of the ventricle nearest the lesion. Also, in abscess the causatory chronic otitis or frontal sinusitis may readily be located. However, none of these difficult diagnostic procedures will be necessary if the clinician is on the lookout early and often for local signs of herpes zoster —erythema, edema, vesiculation, and superficial pain limited to the sensory distribution of the seventh nerve.[20]

It should be recalled that herpes material inoculated into the meninges of experimental animals causes encephalitic changes but no herpetic manifestations. Olitsky and his co-workers on filtrable viruses have repeatedly demonstrated that the neurotropic action of encephalitis virus can be changed into a dermotropic attack by subdermal pad inoculation in animals. Stomatitis virus can thus be made neurotropic, and it will be found to pass readily from the nasal mucosa of mice to the meninges and brain.[11b]

It seems probable that increased susceptibility in syphilitic patients to herpes zoster may be due at least in part to blocking of the normal histiocytic defensive structures of the brain, nerves and meninges by the previous spirochetal infestation, with subsequent fibrotic changes. Similarly impaired resistance to the herpetic

16. Somogyi, L.: Beiträge zum oto-laryngologischem Krankheitsbilde des Herpes Zoster, Ztschr. f. Laryng., Rhin., Otol. **23**: 436, 1932.

17. Netter and Urbain.[9] Bedson, S. P., and Bland, J. O. W.: Complement-Fixation with Filtrable Viruses and Their Antisera, Brit. J. Exper. Path. **10**: 393 (Dec.) 1929. Aitken, R. S., and Brain, R. T.: Facial Palsy and Infection with Zoster Virus, Lancet **1**: 19 (Jan. 7) 1933.

18. Browne.[4] McDonald, C. A., and Taylor, E. W.: Herpes Zoster Oticus, Arch. Neurol. & Psychiat. **25**: 601 (March) 1931.

19. Browne.[4] Rebattu, Mounier-Kuhn, Dechaume, Bonnet and Colrat.[4] Marinesco.[5] McDonald and Taylor.[18]

20. Rebattu, Mounier-Kuhn, Dechaume, Bonnet and Colrat.[4] Lhermitte and Vermès.[6] Favre and Dechaume.[7] Riser and Sol.[14]

virus is noted in leukemic, diabetic, arteriosclerotic and senile individuals and in those long subject to treatment with arsenic and bismuth compounds. Irritation of the skin of guinea-pigs by coal tar was a necessary preliminary to successful production of herpetic lesions by human material in the classic work of Teague and Goodpasture; they also demonstrated encephalitis and typical herpetic inclusion bodies in the brains of inoculated rabbits.

Severe pain in the facial sensory distribution, relayed at the geniculate ganglion from the great superficial petrosal and vidian nerves, may be caused by sinusitis affecting the sphenoid or posterior ethmoid, and rarely by various irritative or malignant lesions of the nasopharynx, larynx and basilar process.[21] Here, again, close observation will disclose no skin lesions and rarely any enlarged or painful glands, unless very severe sinusitis or a metastatic malignant condition is present. Neuralgias due to dental caries, use of arsenicals in root canals, impacted third molars, undescended cuspids, cysts, osseous tumors of the jaw and like conditions are similarly easy to segregate, if necessary by roentgenographic evidence, from the pains of herpes zoster. Obviously, interference with speech and other characteristic local conditions will rule out otalgias caused by ulcers, granulomas or neoplasms of the tonsil, epiglottis, larynx and lateral pharyngeal wall.

The management of herpes zoster oticus is symptomatic. So far, since the virus has not yet been isolated, no specific treatment is possible. The serum of cured cases has been stated to attenuate or shorten the duration of postherpetic pain. "Shock" treatment has been advocated—foreign protein injection—as well as autohemotherapy, from 5 to 10 cc. of the patient's own blood being used intramuscularly.[4b] Recumbency aggravates the pain of herpes zoster; such individuals are better off out of bed unless they have a fever or other complications. Ultraviolet irradiation is found very helpful in shortening the duration of the pain.

Locally, dry open treatment with nonirritating powders or mild, quick-drying antiseptics will obviate secondary infection of the vesicles and prevent scarring.

Cocainization of the sphenopalatine region is often very helpful in cutting down pain and vertigo at the period of geniculate ganglion swelling. The middle ear should be left severely alone unless an intercurrent otitis media requires surgical measures, a very rare complication.

After the congestive stage has passed, diathermy may be tried if residual pain is excessive. Alcohol injection of the sphenopalatine ganglion and pericarotid sympathectomy have been tried, but confirmation of their good effects is conspicuously lacking.

Since the facial paralysis usually clears up within a few weeks, faradic treatment or operative procedures for decompression of the seventh nerve should not be considered until the paralysis has lasted, unchanged, for at least two or three months. Every case of Bell's palsy should be closely examined for traces of herpetic vesicles, and in case of doubt a complement fixation test against a known herpes zoster virus should be made.

It is not unlikely that many cases of herpes zoster oticus pass unrecognized, because of their close resemblance to other diseases of this region, and it is suggested that recognized cases receive careful immunologic study, particularly in those institutions possessing apes and monkeys for experimentation. Only through such laborious and long-continued studies of the filtrable viruses will it be possible to attack this disabling and painful disease effectively.

1020 Southwest Taylor Street.

21. Somogyi.[16] Sluder, Greenfield: Nasal Neurology, Headaches and Eye Disorders, St. Louis, C. V. Mosby Company, 1927 (bibliography). Fenton, R. A., and Larsell, Olof: The Mechanism of Pain Transmission in Certain Types of Otalgia, Tr. Int. Cong. Oto-Rhino-Lar. Copenhagen, Jensen, 1928, p. 562.

ABSTRACT OF DISCUSSION

DR. HARRIS P. MOSHER, Boston: It has been a long time since I have had my imagination stimulated so much. This is a dramatic disease. The story, fortunately, always ends happily. There is probably no other disease in otolaryngology which simulates so many other diseases. Its mimicry is shown by the fact that in one case meningitis has to be ruled out, in another mastoiditis, and in another even fracture of the base of the skull. It has been proved that it is not the ganglion alone that is involved but all nervous tissue. It can be either an ascending or a descending neuritis. There is, however, a selective action on the peripheral sensory nerves. Experimentation has shown that the stomatic virus can be made selective for nerve tissue in mice and that it will pass from the nasal mucosa to the meninges and the brain. The most important practical point is that in patients suffering from herpes there is a specific antibody in the blood. Therefore, in case of paralysis of the facial nerve of doubtful origin, not only a careful examination for vesicles but also a complement fixation test against a known herpetic virus should be made. The innocence of the outcome of herpes zoster oticus, in spite of its worrying manifestations, seems to me to have a parallel in certain ear cases in which the Gradenigo syndrome is present. Some of these cases clear up without operation, some with a simple mastoid operation; by no means all require drainage of the petrous tip. In other words, the mild cases are accompanied by an innocent toxemia of the sixth nerve and of the gasserian ganglion. I have the feeling, in the light of a few recent autopsies, that the gasserian ganglion will bear close watching. I am wondering whether more often than is supposed it does not pick up infection from the nasal sinuses or pharynx. In other words, may it not be the first intracranial structure to be infected and the starting point for infection of the dura or the deeper tissues?

DR. GORDON F. HARKNESS, Davenport, Iowa: Dr. Fenton has reviewed a condition that is rare as a clinical entity, self limited, with unproved etiology, and without any specific therapy. Its differential diagnosis demands the exclusion of a fulminating type of mastoiditis. This is not so difficult, but the rarity of herpes zoster oticus is responsible for its symptomatology not always being kept in mind and has resulted in mastoid operations being performed when the significant symptoms were improperly interpreted. With the eruption and its characteristic distribution, diagnostic errors are largely eliminated. While the facial paralysis generally follows and less commonly is coincidental, it has been reported as preceding the vesicular stage. The deafness is always predominantly that of nerve involvement. The disturbance of taste and surface eruptions on the tongue, in the area of chorda tympani distribution, are significant. Careful observation of the membrana tympani, and the absence of any perforation, are important. Finally, the roentgenogram of the mastoid should add comfort to a course of watchful waiting. It is particularly confusing to speak of herpes zoster as a posterior poliomyelitis. Particularly in the seventh nerve does one have the close proximity of sensory and motor pathways enclosed in a bony canal, so that one can readily conceive of the ease with which inflammatory reactions are transmitted from sensory to motor fibers. The cells of the geniculate, gasserian, ninth, tenth and posterior spinal ganglions are unipolar in type. Histologically they are of a sensory type. The pars intermedia or nerve of Wrisberg constitutes the posterior root of the geniculate ganglion. Parasympathetic fibers from a nidus of cells in the medulla, in close proximity to the facial nucleus, leave as constituent elements of the pars intermedia, the nerve of Wrisberg. They constitute preganglionic fibers and by way of the

chorda tympani and lingual nerves go to the submaxillary and sublingual glands and, by the great superficial petrosal, to Meckel's ganglion. The relief afforded by cocainization of the sphenoid cavity would tend to support the contention of Sluder that the nerve of the pterygoid canal carries afferent impulses. I cannot discuss this paper from the standpoint of the sympathetics and the parasympathetics because I have been unable to find any data that would accord these nerve subdivisions a place as etiologic factors. There are probably variants of this disease involving the fifth, ninth, tenth and cervical nerves. They are also more frequently not so recognized. In this disease, anatomic structures and contiguity of tissues endow it with a striking clinical picture. When a study of the variant types is followed as closely, physicians may be in a better position to discuss etiologic factors.

Dr. Harris H. Vail, Cincinnati: Herpes zoster is complicated by so many factors, such as trauma, syphilis, metastatic malignant conditions of the spine, tuberculosis and fracture of the spine, surgical operations, arsenic and bismuth poisonings, acute and chronic progressive central nervous disease and senility, that Dr. Fenton's presentation is timely. While I can find no fault with the author for citing the comprehensive review of Rebattu and his associates as authority for the statement that the virus of the herpes may travel from cortex to periphery or vice versa, vaccinating the neural structures along which it travels, which serve as its culture medium, my reaction is to challenge that statement. Marinesco states that the process in herpes zoster is an ascending and descending one. My interpretation of Marinesco's article is that his case was not herpes zoster, as there were neurologic evidences of thalamic disease, and postmortem examination four years after a vesicular eruption on the thigh showed active infiltration of the involved ganglions with round and plasma cells. Plasma cell infiltration is not found in true zoster. Marinesco felt that the virus of herpes zoster entered through the skin. Dr. Fenton states that the virus enters probably by the nose and nasopharynx and gives as an authority F. E. Browne of Australia. As three of Browne's four patients were orchardists, I presume that arsenic insecticides were used. Arsenic poisoning was not considered, nor in my opinion was sufficient evidence given to prove that the nasopharyngitis was the factor. The second case reported by Dr. Fenton is interesting but hardly one, I think, of herpes zoster. Cocaine injected into the sphenoid sinus might reach the vidian nerve better than that applied to the sphenopalatine area. Paracentesis seems to be under a tabu, and in reporting his third case Dr. Fenton said: "Making the diagnosis of herpes zoster oticus, my service refused either a myringotomy or a mastoid operation." The advisability of paracentensis in herpes zoster oticus with a normal tympanic membrane might be argued, but there should be no argument in a case presenting a deep red tympanic membrane. Why should this simple procedure be contraindicated when it will provide a drainage outlet? Can an inflammation localized to only a small portion of the middle ear be ruled out with certainty? In all other forms of acute otitis media, paracentesis is indicated. I wish to ask Dr. Fenton why it was contraindicated in his case.

Dr. Ralph A. Fenton, Portland, Ore.: I am grateful for these discussions. In case 1, the inflammation started posteriorly and worked forward. The inflammation did not proceed from the middle ear; there was no bulging, and I refused to do a paracentesis. The patient's hearing was normal; she had no middle ear disease. If paracentesis had been done, the middle ear would speedily have been infected from the open ulcers in the back wall of the canal. The second case was definitely one of herpes zoster but was bilateral, which is rather unusual, although I have found several reports of such things in the literature. There is no question about the case having run the regular course, because these vesicles dried up quickly behind the ears and on the face. Respecting the question of relief of the pain in this man's case by shrinking the sphenoid regions, it should be realized that he was out of his head, raging about the house; only because he was a good friend of mine could I get him to sit down long enough to get probes up past the middle turbinates. Shortly thereafter he said that he felt all right and went back to bed.

GASOLINE AND KEROSENE POISONING IN CHILDREN

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This article comprises a summary of the clinical and laboratory examinations in seven cases of gasoline poisoning and sixty-five cases of kerosene poisoning in children admitted to the Robert B. Green Memorial Hospital between October 1931 and July 1933. The ages ranged from 10 months to 4 years. A considerable number of children have been brought to the emergency room of the hospital with a history of having taken one or the other of these petroleum products. Only those showing signs of acute poisoning, however, were admitted to the hospital. Those showing very little evidence of acute poisoning were allowed to return to their homes after treatment consisting of gastric lavage and a laxative. The essentials of several of the cases are herewith reported.

REPORT OF CASES

Case 1.—A boy, aged 14 months, Mexican, was admitted in a stuporous condition. He had swallowed a "small amount" of gasoline about thirty minutes before admission. Respiration was labored (40 per minute); the pulse was 140 per minute and the temperature 98.6 F. Examination of chest revealed many medium-sized and fine moist râles throughout both lungs. He was treated by gastric lavage, caffeine sodiobenzoate and atropine hypodermically. Death occurred one hour after admission. Autopsy revealed edema of the lungs, the alveoli being filled with fibrin and serous exudate; fatty degeneration of the liver, and dilatation of the stomach. The stomach contents had a strong odor of gasoline.

Case 2.—A boy, aged 17 months, white, drank about an ounce of kerosene a few minutes before admission. He was acutely ill and stuporous. The pulse was 140, the temperature was normal, and the respiration rate was 32. Examination of the chest revealed numerous large moist râles throughout both lungs. Treatment consisted of gastric lavage, atropine and caffeine sodiobenzoate hyperdermically and the administration of a saturated solution of magnesium sulphate through the stomach tube after the lavage. Two hours after admission, the temperature was 106.5 F. One hour later the temperature was unchanged, the respiration rate was 56 and the pulse was too rapid to count, at which time the patient died.

Case 3.—A boy, aged 2 years, a Mexican, drank 2 ounces (60 cc.) of kerosene thirty minutes before admission. He was stuporous and the abdomen was greatly distended. The lungs were clear, the temperature was 100, the pulse was 128 and the respiration rate was 50. During gastric lavage, the child aspirated some of the contents of the stomach, after which moist râles rapidly developed in both lungs. He became restless and twelve hours after admission convulsions developed, which persisted until death two hours later.

Case 4.—A white boy, aged 11 months, drank an unknown quantity of gasoline thirty minutes before admission. At the time of admission he was cyanotic and comatose. The pupils were dilated and the eyes were rolled upward. The temperature was 97.8, the pulse 150 and the respiration rate 40. He had been made to vomit before he was brought to the hospital. There were many moist râles throughout both lungs. In spite of routine treatment, such as previously outlined, the patient showed no improvement and died one hour after admission.

Case 5.—A boy, aged 1 year, drank an unknown quantity of kerosene just before admission. He was apparently not very sick. The temperature was 101 and the pulse and respiration rates were normal. The results of examination were essentially negative. Urinalysis was negative. The white blood count was 11,000, with polymorphonuclears 70 per cent

and lymphocytes 30 per cent. Two days after admission, coryza developed and moist râles appeared in both lungs, caused, we believe, by the development of a respiratory infection subsequent to taking the gasoline rather than to pulmonary irritation from gasoline. The temperature remained around 101 for four days and then fell to normal. The lungs cleared and the patient was discharged on the fifth day in good condition. The treatment consisted of gastric lavage at the time of admission.

CASE 6.—A girl, aged 15 months, a Mexican, drank a fourth of a cup of kerosene four and a half hours previous to admission. The mother immediately gave the child castor oil. There was no history of cyanosis or other evidence of respiratory embarrassment. Medium-sized moist râles were heard in the apex of the left lung, and the abdomen was distended. The temperature was 101, the pulse 110, and the respiration rate 30 on admission. Gastric lavage was omitted in this case. Atropine sulphate was given by mouth. The white blood count was 12,000, with polymorphonuclears 72 per cent, and lymphocytes 28 per cent. Urinalysis was negative. The temperature dropped to normal the next day and by two days after admission the signs in the lungs had disappeared. The patient went home in good condition on the third day.

CASE 7.—A girl, aged 16 months, a Mexican, was admitted to the hospital three hours after drinking an unknown amount of kerosene. She had vomited some of the kerosene immediately after taking it. On admission she was comatose and cyanotic, and the respiration was labored. The temperature was 101 on admission and rose to 104 within two hours, at which height it remained for twelve hours. The examination on admission showed moist râles throughout both lungs. The white blood count was 9,650, with polymorphonuclears 80 per cent and lymphocytes 20 per cent. The urine showed a trace of albumin. When the temperature was at its height, the rate of respiration varied from 40 to 56 per minute. Sixteen hours later it dropped to 30, and the temperature became normal about the same time. The routine treatment of gastric lavage and atropine sulphate hypodermically was employed. The lungs cleared by the third day and the patient went home in good condition.

CASE 8.—A girl, aged 2 years, a Mexican entered the hospital one and one-half hours after drinking half a glass of gasoline, according to the history. The mother gave the child 1 ounce (30 cc.) of olive oil immediately. When seen in the emergency room, she was semicomatose and cyanotic, and appeared to be critically ill. The respiration rate was 50, the pulse 120 and the temperature 99. Many fine moist râles were heard throughout both lungs. The patient was given gastric lavage, caffeine sodiobenzoate and atropine, and external heat was applied. A mixture of carbon dioxide 5 per cent and oxygen 95 per cent was administered by nasal tube, together with artificial respiration for eleven hours. During this critical period the temperature rose to 106. She became more cyanotic, and coma became more pronounced. After this the temperature began to decline and twelve hours later it was normal and the child was conscious. Twenty hours after admission she was greatly improved and at the end of forty-eight hours the lungs were clear and the patient was discharged in good condition.

COMMENT

The total mortality of these seventy-two cases was 11 per cent. Among the kerosene poisoning cases it was 9.2 per cent, while in the small series of gasoline cases (seven) it was 28 per cent. In the fatal cases the children lived from two to eighteen hours after the ingestion and the aspiration of these substances. All the children who died showed definite clinical evidence of pathologic changes of the lung; namely, many moist râles in both lungs, rapid, shallow respirations and cyanosis. Convulsions occurred in two of the fatal cases and in two of the nonfatal cases. Of the nonfatal cases, twenty-two, about 32 per cent showed some evidence of pneumonitis, as evidenced by moist râles in the lungs. From these observations it would appear that about one third of the patients who had swallowed a large enough quantity of the substance to become sufficiently ill to require hospitalization had also aspirated some of the fluid.

The temperature in this series ranged from 97 in the fatal cases to 103 in cases of moderate severity, and it reached 106 in a few of the severe cases. The pulse rate varied from 110 to 150 in the moderately severe cases and was so rapid and weak in some of the fatal cases that it could not be counted. The respiration rates were very rapid, ranging from 50 to 80 per minute in those cases showing evidence of pneumonitis.

The white blood counts varied from normal to 21,000, with polymorphonuclear percentages of 65 to 80. The blood pictures were otherwise normal. The red blood cells and hemoglobin were within normal limits. The urinalyses showed an acid reaction with an occasional 1 plus albumin (ten out of our seventy-two cases). Anuria or painful urination was not observed in any case.

The toxicity produced by the ingestion of coal oil or gasoline need not cause the great concern that aspiration or inhalation of these hydrocarbons causes. Our patients who only drank the fluid showed symptoms of intoxication such as restlessness, incoordination, cyanosis, vomiting and loose stools, with no signs of pneumonitis. These symptoms were followed by a period of depression, which persisted only a few hours, after which the patients were apparently out of danger. They usually responded well to stimulation, emptying of the stomach and catharsis.

The patients who aspirated, as well as ingested, one of these petroleum products presented a much graver clinical picture, owing to the rapid development of pneumonitis, which was evidenced by cough and many moist râles throughout both lungs. In all the fatal cases in our series, there were physical signs of pneumonitis. It is believed that the pneumonitis was produced by the irritating properties of these substances, while the marked evidence of involvement of the central nervous system (cyanosis, rapid and feeble respiration, rapid and weak pulse, restlessness, coma and convulsions) is due to the rapid and overwhelming absorption of the volatile fractions by the pulmonary circulation, this absorption being facilitated by the thin permeable alveolar wall. We feel that the toxic fractions of these oils reach the vital centers of the central nervous system much more rapidly and in larger amounts when absorption takes place in the lungs. Absorption of these substances from the gastro-intestinal tract alone is much slower. There is also the possibility of some detoxification being accomplished by the liver. We feel that the symptoms of gasoline and kerosene poisoning are produced by the toxic action of these substances on the central nervous system, principally the respiratory center motor areas and the vagus center.

There is apparently no loss of oxygen carrying capacity of the blood. Waring[1] in his blood studies in cases of kerosene poisoning was unable to find methemoglobin in the blood. He showed by his experiments on dogs that as much as 100 cc. of kerosene administered by stomach tube produced only slight temporary ill effects, while as small a quantity as 10 cc. injected into the trachea resulted in death in from six to eight hours.

The prognosis may be said to be in direct ratio to the amount of the hydrocarbon that enters the lungs,

1. Waring, J. I.: Pneumonia in Kerosene Poisoning, Am. J. M. Sc. **185**: 325 (March) 1933.

and it has been our observation that if the patient survives several hours he recovers completely. There are practically no complications or sequelae in this type of poisoning. The irritating effects in the lungs and the gastro-intestinal tract disappear completely in from forty-eight to seventy-two hours.

TREATMENT

There appears to be no specific antidote for gasoline or kerosene poisoning. Treatment consists of removing as much of the offending agent as possible by gastric lavage or emesis and laxatives. During gastric lavage there is much retching, struggling and breath catching, which seem to favor aspiration of stomach contents into the lungs. It is our impression that there is less likelihood of aspiration of the fluid when emesis is produced by the oral administration of syrup of ipecac than when gastric lavage is employed. In our more recent cases when cyanosis and other signs of respiratory embarrassment are present, we believe that the use of oxygen (95 per cent) and carbon dioxide (5 per cent) has been of considerable benefit. We therefore recommend the administration of oxygen and carbon dioxide in all cases that show such signs. It is employed for its stimulating action on the respiratory center rather than to increase the oxygen-carrying power of the blood. We have also given atropine sulphate and caffeine sodiobenzoate hypodermically for their stimulating effects.

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DILAUDID AND MORPHINE EFFECTS ON BASAL METABOLISM AND OTHER BODY FUNCTIONS

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Dilaudid (dihydromorphinone hydrochloride), a new morphine derivative,[1] was first introduced into this country from Germany in 1932 by Alvarez.[2] Eddy[3] has reviewed the foreign literature and reported preliminary experimental studies of the toxicity and action of this drug in animals. Paine, Carlson and Wangensteen[4] used dilaudid in the treatment of nineteen patients and considered it effective in controlling pain but not superior to morphine in decreasing the incidence of postoperative distention, nausea and vomiting. Diehl,[5] in his study on the medicinal treatment of the common cold, found a combination of dilaudid and papaverine as efficient as the codeine-papaverine preparation which he recommends but more likely to produce undesirable side-effects.

The chief advantages claimed for dilaudid over morphine are that its repeated use has less tendency to produce habit formation and that there are fewer unfavorable side-effects, such as nausea, constipation and euphoria.[6] Eddy,[3] however, especially stresses that addiction to dilaudid as well as the occasional appearance of toxic symptoms has been reported by some German authors. When used in small therapeutic doses, dilaudid is said to allay pain and cough effectively with little tendency toward narcosis or depression of the respiratory center. Because the compound is more toxic than morphine the recommended dose is about one-fifth that for morphine, $\frac{1}{32}$ grain (2 mg.) of dilaudid corresponding to $\frac{1}{6}$ grain (10 mg.) of morphine sulphate.

Information of practical value may be obtained by a comparative study of the effects of dilaudid and morphine on the basal metabolism, tactile discrimination and other body functions in normal adults. Previous workers[7] have shown that morphine and codeine within therapeutic ranges tend to lower the basal metabolic rate in proportion to the dose given. Correlation of this effect with the reduction of tactile discrimination offers a method of estimating the intensity of the action of central nervous system depressants, particularly those which produce both analgesia and narcosis.[8] Further significant data are to be obtained in carrying out a study of this nature by observing the changes in the various body functions and recording the incidence of unfavorable side-actions.

METHODS

The drugs were administered subcutaneously in proportion to body weight to normal young adults, mostly male, aged from 18 to 31 years. One group of ten subjects served as controls and received a placebo of a grain of lactose in 1 cc. of water.

The determinations of oxygen consumption were made by the closed method with the Sanborn "grafic" apparatus, and the Sanborn averages were used for estimating the basal metabolic rate. All initial determinations were made after a fast lasting fifteen hours and after a period of rest in bed lasting thirty minutes. Following the administration of the drug, metabolism tests were taken at intervals of twenty, sixty, ninety and one hundred and twenty minutes. The pulse rate, blood pressure, temperature and tactile discrimination were also observed and the subjective symptoms were recorded between the metabolism tests. The respiratory rate was obtained directly from the metabolism chart. Tactile discrimination was studied by noting the subjects' ability to distinguish between one or two points of pins on the volar surface of the wrist, care being taken that the same restricted area was tested each time. Two days after the test, the subjects returned to report on the occurrence of unfavorable after-effects.

Table 1 shows the doses of the drugs employed, the number of subjects treated in each group and the average maximum changes from normal during the two hours after the drug was given. The accompanying chart shows for each dose and drug used the changes in the metabolic rate over the two hour period of the test. The incidence of undesirable side-effects is shown in table 2. In this table data have been included on a number of additional subjects who received drugs but

From the Department of Pharmacology, University of West Virginia School of Medicine. Appreciation is acknowledged of the assistance rendered by Kenneth A. Rothey, M.D.; Rupert W. Powell, A.B., and D. Gerald Nyhan, A.B., in many of these experiments.

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whose cases have not been reported either because the initial metabolic rates were not within normal ranges or because they did not take the metabolism tests. In the latter group are a number of medical students who received subcutaneous doses of these drugs in the laboratory in order to study the effects of opium derivatives in man.

A control group of ten subjects who were given placebos was tested in the same manner as those taking drugs. This provided information with respect to the influence of various environmental factors on the individual when subjected to a number of metabolism tests and observations over a period of several hours. While precautions were taken to secure complete relaxation and the subjects, believing they had received a drug, attempted to sleep between tests, it is interesting to note that there was a gradual rise in their metabolic rates. This may be attributed to the subject's increasing restlessness due to hunger, the discomfort from prolonged lying in bed, the pyschic fear of the hypodermic injection and the annoyance of constant subjection to the tests. The other body functions showed little variation from the normal, the temperature and respiratory rate tending to increase slightly and the pulse rate and pulse pressure tending to fall. In three subjects tactile discrimination decreased in sensitivity, while in the majority an increase in acuity was noted with successive trials.

DRUG EFFECT

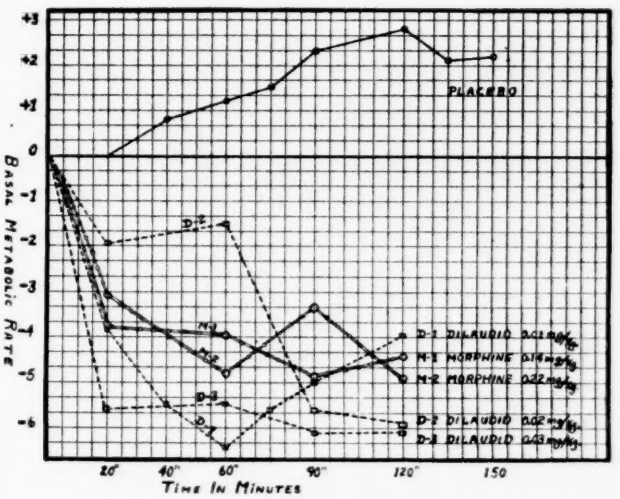
Dilaudid seemed to act more rapidly than morphine. With either drug within a period of five to fifteen minutes after the injection the subject usually experienced a sense of intense hunger and noted considerable borborygmus. This lasted a short while and then the face became a deep red, relaxation occurred and usually the subject remained practically motionless unless disturbed by itching. About one fourth of the subjects slept lightly at some time during the test, sleep usually coming on about forty minutes after administration of the drug.

TABLE 1.—*Summary of Average Maximum Changes in Metabolic Rate and Body Functions Following Subcutaneous Administration of Placebo, Morphine and Dilaudid*

Drug	Dose in Mg. per Kg. of Body Weight	Number of Subjects	Respirations per Minute	Pulse Rate	Pulse Pressure Mm. of Mercury	Temperature, C.	Basal Metabolic Rate
Placebo	....	10	+1.2	−3.2	−1.4	+0.7	+3.1
Morphine	0.14	10	−0.7	−1.4	−1.2	+0.01	−5.5
Morphine	0.22	10	−0.7	−2.7	−5.1	−0.12	−6.1
Dilaudid	0.01	10	−1.4	−7.8	0.0	−0.12	−7.0
Dilaudid	0.02	10	+0.6	−4.7	−2.4	0.0	−7.6
Dilaudid	0.03	20	−1.1	−1.2	−2.2	−0.1	−8.3

Morphine Sulphate.—Morphine was administered to two groups of ten subjects. In the group receiving an average dose of 0.14 mg. per kilogram of body weight, or a total of approximately ⅙ grain (10 mg.), the average maximum depression in the metabolic rate for the entire period was minus 5.5 per cent. Within twenty minutes after giving the drug the metabolic rate dropped to an average of minus 3.7 per cent and then gradually fell to a level of 4.8 per cent after ninety minutes. It stayed near this level for the remainder of the experiment. Changes in the respiratory rate, pulse rate and pulse pressure were inconstant, some subjects showing an increase although in the majority there was a decrease. The temperature tended to increase slightly from 0.1 to 0.3 degree centigrade in six subjects, but similar decreases in the others brought the average to a negligible amount. Tactile discrimination showed a slight but definite decrease in six subjects, no change in two and an increase in two.

The group receiving an average dose of 0.22 mg. of morphine sulphate per kilogram of body weight (approximately ¼ grain per subject) showed a slightly greater depression of the basal metabolic rate.



Average maximum changes in basal metabolic rate after administration of placebo, morphine and dilaudid. Ordinate, basal metabolic rate; abscissa, time in minutes; broken line, dilaudid; chain line, morphine; straight line, placebo.

The rise noted at the period of ninety minutes may have been due to the fact that several subjects complained of slight itching at this time. The respirations tended to slow down somewhat, only three subjects showing increases of from one to three respirations per minute, with an average decrease for the group of 0.7 per minute. The pulse pressure dropped in all but two subjects resulting in an average decrease of 5.1 mm. of mercury. While individual changes in the pulse rate and temperature varied, the tendency was toward a decrease. Tactile discrimination was uniformly decreased.

Dilaudid.—Three ranges of doses were used for dilaudid. A small dose of 0.01 mg. per kilogram of body weight (approximately 0.5 to 1 mg. per subject) was given to ten subjects. With one exception, a maximum depression of the basal metabolism of from 5 to 13 per cent, with an average of minus 7 per cent for the two hour period, was noted. A gradual wearing off of the effect of the drug was evident and at the end of the test the average decrease was only 3.9 per cent. With this low dosage there was some tendency to depress the respiration, six subjects showing a decrease of from one to three respirations per minute. The average change in the respiratory rate was a fall of 1.4 per minute. A consistent decrease in the pulse rate varying from two to sixteen per minute was noted in all subjects, with an average decrease of 7.8 beats per minute. The pulse pressure increased from 4 to 10 mm. of mercury in seven subjects, although this gain was offset by greater decreases of 10 to 14 mm. of mercury in the other three. The temperature dropped from 0.1 to 0.5 degree centigrade in seven subjects, resulting in an average fall of 0.12 degree. Tactile discrimination was definitely decreased in all but two subjects, who gave unreliable readings.

A second series of ten subjects received a dose of 0.02 mg. of dilaudid per kilogram of body weight (the average total dose per subject was 1.4 mg.). Again, all except one showed decreases in the metabolic rate ranging from 6 to 19 per cent, with an average for the group of minus 7.6 per cent. This value would have been even greater had it not been offset by an increase of 14 per cent in one subject, who complained severely of itching. The failure of the average basal metabolic rate to drop further was undoubtedly due to the fact that most of the subjects experienced intense itching. With this group the respirations tended to increase, the pulse rate was decreased in all but two resulting in an average fall of 4.7 beats per minute, and the pulse pressure showed the slight average fall of 2.4 mm. of mercury. Changes in temperature were inconstant. Tactile discrimination decreased definitely in all but one patient.

TABLE 2.—*Side-Effects Following Subcutaneous Administration of Morphine and Dilaudid*

Drug and Type of Test	Number of Patients	Dose	Number Noting Symptoms: Euphoria	Itching	Vertigo	Nausea	Vomiting	Constipation	Diarrhea	After Effects
Morphine										
Metabolism..	10	0.14 mg./Kg.	2	4	8	4	0	5	0	1
	10	0.22 mg./Kg.	2	4	10	5	4	1	0	4
Students.....	5	1/6 grain	1	2	5	5	4	3	1	2
	16	1/4 grain	8	6	7	12	3	6	0	4
Total.....	41		13	16	30	26	11	15	1	11
Percentage.....			32%	40%	73%	63%	27%	37%		27%
Dilaudid										
Metabolism..	10	0.01 mg./Kg.	1	2	6	4	0	3	0	3
	10	0.02 mg./Kg.	3	8	4	2	0	2	0	1
	20	0.03 mg./Kg.	4	11	17	15	5	5	1	4
Extra metabolisms.....	14	0.01-0.04 mg./Kg.	2	8	8	8	4	3	1	4
Students.....	20	2 mg. to each	3	10	10	14	6	9	4	10
Total.....	74		13	39	45	43	15	22	6	22
Percentage.....			17%	53%	61%	58%	20%	30%	8%	30%

A third group of twenty patients receiving a dose of 0.03 mg. of dilaudid per kilogram of body weight (a total of 2 mg., the usual therapeutic dose) likewise showed inconstant changes for the individual body functions, although the effect in the majority was a decrease from normal. While a maximum increase in the metabolic rate of 3, 6 and 10 per cent was observed in three subjects, the others showed a decided decrease. In four patients a marked depression in the rate of 16, 19, 22 and 33 per cent respectively occurred. The average maximum decrease in the metabolic rate was 8.3 per cent. The changes in the other body functions were slightly more marked than those noted with the previous doses. A decrease in the respiratory rate ranging from one to three per minute occurred in fourteen subjects, but since an increase was noted in the others, the average decrease was only 1.1 per minute. In twelve subjects the pulse rate showed an average decrease of 6.8 but in the others increased an average of 4.4 per minute, resulting in an average change for the group of 1.2 less beats per minute. The pulse pressure decreased in thirteen of the twenty subjects, giving an average fall of 2.2 mm. of mercury. The temperature likewise dropped in thirteen subjects, while the tactile discrimination was decreased markedly in every case.

SIDE-EFFECTS

Itching, perspiration or other symptoms were not noted in the group receiving placebos. Three subjects slept lightly during the experiments, while several noted transient vertigo on arising, due probably to prolonged lying in bed and increasing hunger.

In those receiving drugs the incidence of reported side-effects as shown in table 2 is higher than might otherwise be expected, since a special effort was made to note all untoward reactions whether severe or not. Since both drugs were used in therapeutic dosages and in nearly equivalent amount, the incidence of side-actions has been reported in the percentage of the total number of subjects receiving either drug. Euphoria, a difficult symptom to gage, was considered to be present only when the subject strongly endorsed the immediate effects of the drug as decidedly pleasant. With larger doses of either drug, several subjects fell asleep and had fantastic dreams while others seemed content to remain and be tested for the remainder of the day. In five, priapism lasting an hour or more was noted. A sense of nausea while in a recumbent position was experienced by only eight, of whom one vomited. The high incidence of itching, particularly with dilaudid, was considered to be a result of drug action.

The fact that each subject was made to arise and walk home on completing the tests, usually at noontime, may have been a factor in causing nausea and vomiting in many. In a number, an attempt to eat lunch or drink coffee seemed to provoke these symptoms. Of the seventy-four subjects who were given dilaudid, six complained of diarrhea during the night, while six others complained of severe pubic pain and inability to void for some time. Headache was noted in about a dozen subjects, most of whom had taken morphine. Dilaudid was given to seven girls and in four it caused severe reactions characterized by evidences of mental excitement such as crying, restlessness, nervousness and, in two, muscular cramps and tremors. Of the five girls who received morphine, only two showed similar unfavorable reactions.

TOXIC DOSES OF DILAUDID

Through error two subjects were given unusually large subcutaneous doses of dilaudid, one (J. D. R.) receiving 13 mg. and the other (P. T. M.) 21 mg. The following observations were made:

The effects came on rapidly. Both patients became very sleepy and found it impossible to stay awake. Metabolism tests were taken for only an hour thereafter, J. D. R. showing a decrease of only 8 per cent in the metabolic rate while P. T. M showed a decrease of 23 per cent. Intense itching caused considerable annoyance to both subjects and may have been responsible for the failure of the metabolic rate to decrease further. In P. T. M. the respirations showed from 15 to 4 per minute within half an hour. After being observed for an hour, the subjects were made to arise and were taken home. Following attempts to drink coffee, both vomited and continued doing so for the rest of the day, P. T. M. noting blood in the vomitus at times. They were greatly depressed and attempted to sleep, but their rest was periodically disturbed by nausea and vomiting and attacks of apnea and dyspnea.

At about 10 p. m. the symptoms subsided and they slept soundly until the next noon. The following day they felt very weak, tired and dopey, and suffered from constipation, but two days later they appeared to be none the worse for their experience. It is interesting to note that a few months later one-fourth grain of morphine sulphate provoked considerable nausea and vomiting in both these patients.

COMMENT

Because of the limited number of subjects used in this study and the unavoidable occasional variation in individual responses, it has been possible to show little more than the trend of the effect of the drugs on the various functions. It is apparent that both morphine and dilaudid lower the metabolic rate, as shown in the chart, generally in proportion to the dose given. In direct contrast, an increase in the metabolic rate was shown in the subjects of the control series. With dilaudid the metabolism is depressed sooner and to a more marked degree than with the supposedly equivalent doses of morphine. While it is stated [9] that "a dose of $\frac{1}{32}$ grain (2 mg.) of dilaudid is comparable to $\frac{1}{6}$ grain (10 mg.) of morphine sulphate and $\frac{1}{20}$ grain (3.2 mg.) to $\frac{1}{4}$ grain (16 mg.) of morphine" or, practically, that dilaudid is five times more active than morphine, our results indicate a greater difference. At least with respect to the effects on the metabolic rate, dilaudid appears more than ten times as depressant on the basis of dosage per kilogram of body weight. Unfortunately, it was impossible to estimate accurately quantitative changes in tactile discrimination, although the lowest dose of dilaudid used, 0.01 mg. per kilogram of body weight, produced more loss of discrimination than morphine given in a dosage of 0.14 mg. per kilogram of body weight.

Paine and his associates [4] state that dilaudid occasionally depresses the respiration markedly. We experienced in several subjects dangerous slowing of the respirations following therapeutic doses of both morphine and dilaudid.

REPORT OF CASES

CASE 1.—C. K., a female medical student, aged 26, weighing 67 Kg., was given a 2 mg. dose of dilaudid at 2:30 p. m. Within an hour she showed marked sleepiness, mental depression and slowing of the respiration from the normal rate of seventeen to three per minute. As collapse was feared after the respiratory rate had remained at this level for twenty minutes while the subject slept, she was aroused and made to walk. After drinking a cup of coffee she vomited several times and in a short while appeared to be less depressed. During the evening she was able to carry on her usual duties as clerk in a drug store.

CASE 2.—B. J. M., a male medical student, aged 24, weighing 60 Kg., during a metabolism test after the small dose of 0.5 mg. of dilaudid showed a depression of the respiratory rate from fifteen to six per minute, which lasted for nearly an hour.

Similar idiosyncrasies were noted with therapeutic doses of morphine, although the symptoms seemed to be more prolonged as shown in the following cases:

CASE 3.—P. D. N., a medical student, aged 27, weighing 61 Kg., was given one-fourth grain (0.016 Gm.) of morphine sulphate during class at 2:30 p. m. Within two hours he was greatly depressed, very sleepy and showed a drop in respirations from seventeen to three per minute. After attempting to drink some bitter black coffee he vomited and became very weak. He was taken home and that evening, while in the care of several other students, he fell asleep a number of times but had to be awakened each time because his respiratory rate fell to about three or four per minute. At midnight the patient was able to keep down some coffee and soon afterward seemed improved. He was allowed to sleep but was watched carefully and from then until noon the next day slept soundly.

CASE 4.—H. G. E., female medical student, aged 22, weighing 53 Kg., received one-sixth grain (0.01 Gm.) of morphine in class and within an hour showed a transient depression of the respiratory rate from eighteen to five. During this time she voided incontinently, vomited three or four times and when aroused for observations to be made by her fellow students, cried hysterically. Two hours after receiving the drug she was taken home and remained depressed during the evening. She vomited several times but showed no further respiratory embarrassment.

From these observations and, more particularly, from our experience with the two patients receiving toxic doses of dilaudid, we feel that dilaudid is slightly less depressant to the respiratory center than morphine.

With respect to the effects of these drugs on the circulation, Anderson [7] has shown that within an hour following the oral administration of therapeutic doses of morphine a very definite constant increase occurs in the pulse rate and the pulse pressure. We also have noted this phenomenon in a large number of our cases, but it occurred within twenty minutes following injection of either drug. After an hour, however, the full depressant effect of these drugs becomes evident and a definite drop occurs in both functions. The notable slowing of the pulse rate with the lowest dose of dilaudid (table 1) is probably a reflection of the depressant effect of the drug on the metabolism, lack of an appreciable stimulatory effect, and also the absence of itching.

Several factors seem to play a part in causing the general fall in body temperature observed after these drugs. With the lowered basal metabolism there is less heat production and also there is increased heat loss through dilated cutaneous vessels and through excessive perspiration.

In general, it is apparent that therapeutic doses of either morphine or dilaudid have little appreciable effect on the pulse rate, pulse pressure, respiratory rate and body temperature, although the tendency is toward a decrease from the normal level. While the changes occurring in the respiratory rate may be due to the depressant action of the drug directly on the respiratory center, it is felt that what changes occur in the circulation and temperature are secondary to the lowering of the basal metabolic rate.

In this study no consideration has been given to the habit-forming tendencies of the two drugs. However, we feel that since dilaudid compares favorably with morphine and offers the possibility of being less habit forming, it deserves critical clinical trial.

SUMMARY

1. In normal subjects receiving placebos and tested over a period of several hours, the basal metabolic rate tended to rise with successive observations.

2. Morphine and dilaudid, administered subcutaneously in therapeutic doses, tend to lower the basal metabolic rate in proportion, usually, to the dose given.

3. Dilaudid acts more rapidly but over a shorter period of time than morphine.

4. While dilaudid is said to be about five times as potent as morphine, our results with respect to the effects on the basal metabolism indicate that it is at least ten times as active. We believe the recommended subcutaneous dose of 2 mg. to be sufficient in ordinary cases and about equal to 16 mg. ($\frac{1}{4}$ grain) of morphine.

5. Tactile discrimination is decreased to a slightly greater extent by a dose of dilaudid (0.01 mg. per kilogram of body weight) about one-tenth that of morphine (0.14 mg. per kilogram of body weight).

6. Slightly less respiratory depression seems to result from dilaudid than from morphine.

9. Bilhuber-Knoll Corporation: Dilaudid, Pamphlet 904, June 11, 1933.

7. Both drugs tend to cause similar slight decreases from normal in the heart rate, pulse pressure and temperature.

8. Undesirable side-effects occur with slightly less frequency following the administration of dilaudid than after morphine. Itching, however, seems to be a prominent complaint after dilaudid.

West Virginia University School of Medicine.

ALUM-PRECIPITATED DIPHTHERIA TOXOID

THE RAPIDITY OF IMMUNIZATION FOLLOWING ONE DOSE

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During the past few years the methods of immunization against diphtheria have been greatly improved. Safe immunizing agents have been produced which contain a large amount of specific antigen, so that it is now possible to bring about a reversal in the Schick reaction from positive to negative in a larger proportion of individuals in a shorter period of time than by the older methods of immunization.

The results following the use of toxoid in the prevention of diphtheria are well known. Certain improvements in the production of toxoid have been made in an attempt to increase or concentrate the antigenic content and reduce the number of injections necessary to protect against infection. Various substances have been added to toxoid with the idea of decreasing the rate of absorption from the site of injection and thereby producing a longer stimulation to the production of protective antibodies. The most common of these substances has been some form of alum. The work of various investigators who have used diphtheria toxoid treated with alum is covered in a recent report by Baker and Gill.[1] Havens and Wells [2] reported that by precipitating toxoid with from 1.0 to 2.5 per cent of aluminum potassium sulphate the foreign protein content could be reduced to from 13 to 20 per cent of the amount it contained originally. They were also able to protect guinea-pigs against 5 minimum lethal doses of diphtheria toxin by an injection of 0.1 unit of alum-precipitated diphtheria toxoid. Subsequent reports by Graham, Murphree and Gill [3] show that, with one injection of 1 cc. of alum-precipitated diphtheria toxoid containing from 5 to 10 antigenic units, 92.4 per cent of Schick positive children became Schick negative.

This investigation was done to determine the rapidity with which a positive Schick test could be changed to a negative one in susceptible persons by the use of alum-precipitated diphtheria toxoid. The toxoid used for this purpose was supplied by the state board of health of Alabama and the Schick testing material was obtained from the state board of health of Massachusetts. The same materials were used throughout for the original tests and the retests.

In order to control these observations with preliminary Schick tests and repeated tests after the injections of the immunizing agent, children ranging in age from 4 to 19 years and residing in two institutions were tested with heated and unheated diphtheria toxin to determine the positive, pseudopositive, combined and negative Schick reactors. Approximately 900 children were tested. Of this number seventy-six, or 8.4 per cent, developed a positive Schick test, indicating a relatively low susceptibility rate on the part of the population tested. It is not unusual to find such a small number of persons susceptible to diphtheria in institutions, owing to repeated exposure to and contact with persons harboring and discharging diphtheria bacilli from the upper respiratory tract. It was found that those persons who were Schick positive had been in residence in these institutions for from one to five years. The majority have lived in them more than two years. It seems likely, therefore, that the positive reactors included in this report represent those persons who have been resistant to immunization through contact in the institution.

The positive Schick reactors from each institution are reported separately as group A, consisting of fifty-three children, and group B, comprising twenty-three. Each person was given one injection of 1 cc. of alum-precipitated diphtheria toxoid subcutaneously in the deltoid region. The members of group A were Schick tested twenty-two days after the injection. Those remaining positive were retested sixty and ninety days later. The plan of procedure was the same with the individuals in group B except that the first retest was done fourteen days after the injection of alum-precipitated toxoid and those remaining positive were retested on the twenty-eighth and forty-second days. The accompanying table shows the results following one subcutaneous injection of 1 cc. of alum-precipitated diphtheria toxoid.

Results Following One Subcutaneous Injection of 1 Cc. of Alum-Precipitated Diphtheria Toxoid

	Group A		
Total Number Schick Positive	Per Cent Schick Negative 22 Days After Injection	Per Cent Schick Negative 60 Days After Injection	Per Cent Schick Negative 90 Days After Injection
53	92.4	94.3	96.2
	Group B		
Total Number Schick Positive	Per Cent Schick Negative 14 Days After Injection	Per Cent Schick Negative 28 Days After Injection	Per Cent Schick Negative 42 Days After Injection
23	60.0	95.6	100.0

In reporting the results of these observations we will give the data for all members of each group, as the distribution of males and females was approximately the same. The results obtained following one subcutaneous injection of 1 cc. of alum-precipitated diphtheria toxoid in these two groups of children indicate that a reversal of the Schick test from positive to negative may occur within a relatively short period of time.

In group B, consisting of twenty-three children, 60 per cent were Schick negative fourteen days after the injection, while 95.6 and 100 per cent were negative

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We are indebted to Drs. James C. Gardner and Perry D. Priest for their cooperation in making this work possible.

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twenty-eight and forty-two days respectively after immunization.

In group A, 92.4 per cent of fifty-three children were Schick negative twenty-two days after the one injection of alum-precipitated diphtheria toxoid. There were slight increases in the number of negative reactions obtained in this group sixty and ninety days after immunization, 94.3 per cent being negative after sixty days and 96.2 per cent after ninety days.

It should be noted that in one group 92.4 per cent were Schick negative after twenty-two days and in the other group 95.6 per cent were negative twenty-eight days following immunization. While the number of Schick negative reactions in both groups increased after these periods, for practical purposes an interval of from three to four weeks seemed to be sufficient to bring about a reversal of the Schick test in a large percentage of the children observed.

The local and general reactions following the injection of diphtheria toxoid were noted for forty-eight hours. The reactions following the injection of 1 cc. of alum-precipitated diphtheria toxoid consisted of the usual symptoms that may appear following any similar procedure. In a majority of those receiving the injection there was no increase in temperature twenty-four hours later. Only five or six had temperatures of more than 100 F. The highest temperature recorded was 101.4 F. Those in whom there was an increase in temperature complained of headache, slight nausea and general malaise. These symptoms usually disappeared within forty-eight hours.

There was some local reaction in a large percentage of those receiving the precipitated toxoid. This, however, was not of serious nature and cleared up quickly. There was apparently no relationship between the amount of increase in temperature and the local reaction. In only one instance was the general reaction severe enough to require bed rest. No abscess formation at the site of injection occurred. In two instances the area of injection remained red, swollen, hot and moderately tender for several days, but no suppuration occurred. In a majority of the individuals a small firm nodule could be felt at the site of injection. It is not unusual for such an indurated area to occur following other immunizing procedures, so that it is not surprising to have such a formation occur following the injection of precipitated diphtheria toxoid.

In comparing the results of these observations with those reported following the use of other immunizing agents against diphtheria we found that immunity is probably developed more rapidly following the use of one dose of alum-precipitated diphtheria toxoid. Harrison [4] has shown that, following three injections of 1 cc. each of 0.1 L + diphtheria toxin-antitoxin mixture, 64 per cent of Schick positive children became negative from 122 to 203 days after the last injection. He has also reported that 95 per cent of a group of children were Schick negative from 90 to 133 days following two or three injections of commercial preparations of untreated toxoid.

White and Schlageter,[5] using toxoid with 0.2 per cent alum and without alum prepared in the laboratories of Dr. William H. Park,[6] have reported that 96.1 per cent of a group of children were immunized in two months and 100 per cent in six months following two doses of 1 cc. each of toxoid with alum, while 94.6 per cent of another group of individuals were immunized in two months and 95.9 per cent in six months following two doses of toxoid without alum. They also report that, following three doses of 0.5 cc. each of toxoid with alum, 94.2 per cent were immune at two months and 96.1 per cent at six months. Following one dose of toxoid with alum, 50.8 per cent were immune in two months and 73.2 per cent in six months, while with one dose of untreated toxoid 49.2 per cent were immune in two months and 82.0 per cent in six months.

These data indicate that, while essentially the same results can be obtained in from two to six months with untreated toxoid and toxoid with 0.2 per cent alum, from two to three doses are required, whereas only one injection of alum-precipitated toxoid is necessary. The results following only one dose of toxoid with and without alum or three doses of toxin antitoxin mixture are not as good as with one dose of alum-precipitated toxoid.

SUMMARY

The results obtained following the injection of one dose of 1 cc. of alum-precipitated diphtheria toxoid indicate that immunity to diphtheria may be produced rapidly.

In one group of twenty-three Schick positive children, 60 per cent were Schick negative in fourteen days. In the same group, 95.6 per cent were Schick negative in twenty-eight days and 100 per cent in forty-two days after the injection.

In another group of fifty-three children, 92.4 per cent were Schick negative twenty-two days after receiving one injection of alum-precipitated diphtheria toxoid, 94.3 per cent were negative in sixty days, and 96.2 per cent were negative in ninety days after immunization.

The results following immunization with a single dose of alum-precipitated diphtheria toxoid compare favorably with those obtained following two doses of toxoid without alum or toxoid with alum and are much better than those reported following one dose of toxoid without alum and with alum or three injections of standard diphtheria toxin-antitoxin mixture.

4. Harrison, W. T.: Advantages of Toxoid in Diphtheria Prophylaxis, Am. J. Pub. Health **22**: 17-24 (Jan.) 1932.
5. White, J. L., and Schlageter, E. A.: Diphtheria Toxoid, J. A. M. A. **102**: 915 (March 24) 1934.
6. Park, W. H., and Schroder, M. C.: Diphtheria Toxin-Antitoxin and Toxoid: A Comparison, Am. J. Pub. Health **22**: 7-16 (Jan.) 1932.

Headache.—The most important varieties of headache which possess somewhat distinctive characteristics are as follows: Nephritic headache—except the sudden attacks due to uremia—is in most cases caused by the arteriosclerosis which so often forms an essential part of chronic nephritis. The pain is apt to be of a throbbing character, somewhat shifting and often accompanied by vertigo and tinnitus. Headache from disorders of digestion and constipation is usually of a throbbing, pulsating character; it affects the frontal and orbital regions, and is made worse by sudden movements of the head. The headache of uterine diseases is usually occipital, sharp and radiating. Anemic headache is a sore and pressing pain, usually felt in the forehead and orbital region or in the vertex, and is often associated with occipital pressure. As its name indicates, it is found in connection with the general and special forms of impoverished blood. In the typical headache of hysteria the patient feels as if a nail was being driven into the top of the head (clavus), but this type is of comparatively infrequent occurrence. The headache of neurasthenia, probably the most frequent of all headaches which require treatment, is of a pressing character; it is usually vertical, but is sometimes described as a band around the head. It is almost invariably worse in the morning, becoming lighter or disappearing toward the latter part of the day.—Gordon, B. L.: Importance of Cephalalgia in Ocular Diagnosis, *Arch. Ophth.* **11**:769 (May) 1934.

Clinical Notes, Suggestions and New Instruments

OTOGENIC TETANUS: REPORT OF A CASE

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Medical literature reveals that tetanus of otogenic origin is a rare occurrence, and when it does occur it is seldom suspected. Usually the underlying cause of the condition is trauma to the drum, a foreign body in the canal, or external irritation, all followed by a chronic suppurative otitis media or other suppurative process.

The following case was characterized by an acute onset, with death resulting in a very short time:

W. S., a white boy, aged 4½ years, admitted to the hospital at 11 p. m., Oct. 14, 1932, had had a cold in the head for two weeks, with a discharging ear for the preceding five days; he had been unable to open the mouth for one day.

The parents stated that the patient had had a cold for about two weeks, which lasted until three days prior to admission. October 7 the right ear began to discharge and continued for five days. Except for buzzing in the right ear on the morning of admission, the patient presented no other complaint. On the date of admission he was taken to a clinic, where the examining physicians were unable to open his mouth, which they attributed to stubbornness, and made an appointment for him to return at a later date. The same evening the parents put the patient to bed at home, and half an hour later he got up, walked across the room and fell; his jaws locked, he choked several times and he turned purple. A physician in the neighborhood was called. He referred the patient to the hospital.

The recent past history was entirely negative. However, on detailed questioning, additional history was obtained from the parents as follows:

About six months before, a milk case fell on the child's head, making a deep gash on the scalp. The wound was treated with mercurochrome and healed without trouble. From time to time the child had gotten splinters in his hands while playing in the street, and the last incident of this type was about three weeks prior to admission. He also had had several scratches of the right heel, which troubled him some when putting on his shoes, but the duration of these scratches was unknown.

On physical examination the patient was breathing rapidly; the rectal temperature was 98.4 F., the jaws were tightly locked and the head was retracted.

The membrane of the right ear was ruptured and draining pus. The left ear was normal. The mouth could not be forcibly opened until 4 grains (0.26 Gm.) of sodium amytal was given intravenously for relaxation. Examination of the throat was negative. The tongue, however, was scalloped and quite swollen, and the neck was rigid and spastic. The heart and lungs were normal, the abdomen was markedly relaxed and the spleen was enlarged a distance of 2 fingerbreadths below the costal margin.

Following the diagnosis of clinical tetanus, a cisternal puncture was performed, 25 cc. of fluid being withdrawn; 60,000 units of tetanus antitoxin (previously warmed to body temperature) was allowed to flow in by the gravity method, and 140,000 units was given intramuscularly.

Seven hours following this therapy the temperature was elevated to 106 F. and dropped to 104 four hours later and was associated with a pulse of over 180.

Eight hours following the cisternal and intramuscular injections, 150,000 additional units of serum was given intravenously, very slowly. After this procedure the temperature again became elevated to 107.6 F. but gradually subsided to 103.

Death, which ensued thirty-six hours after admission, was due to both cardiac and respiratory failure. During the entire stay in the hospital, the respirations were rapid and shallow, the pulse was thready and rapid, and the patient was cyanosed much of the time, so that an oxygen-carbon dioxide mixture was required at frequent intervals.

During the hospitalization period the patient received 32 grains (2 Gm.) of sodium amytal, subcutaneously, for sedation, an average of 4 grains every three hours.

The colloidal benzoin test was negative.

Report (by Dr. Anson Hoyt of the pathology department) of the smears and culture from the draining ear, five days later, was as follows: Clostridium tetani (tetanus bacillus) was isolated from the culture from the right ear. This was definitely proved to be clostridium tetani by mouse inoculation and by protection of a control with tetanus antitoxin.

COMMENT

A clinical case of tetanus following an acute otitis media without any definite history of trauma to the ear was preceded by an acute infection of the upper respiratory tract.

It is possible that this patient may have been a carrier and that the acute infection of the upper respiratory tract activated and resulted in the clinical case as reported.

It is also conceivable that the splinters or the head injury previously mentioned might have played a rôle. This is purely conjectural, as the organism was recovered from the discharge from the ear.

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NEUTROPENIA FOLLOWING DINITROPHENOL, WITH IMPROVEMENT AFTER PENTNUCLEOTIDE AND LEUKOCYTE CREAM

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Mrs. M. G., aged 31, admitted to the hospital, May 8, 1934, had suffered from progressive pain with swelling in the gums and submaxillary glands for forty hours prior to admission. Two chills had occurred in the twelve hours previous to admission, and the temperature ranged from 101.6 to 102.4 F. She had vomited once on the day of onset and once the following day, and she was constantly nauseated.

She stated that on April 13 she had begun taking, under direction of a physician, sodium alpha-dinitrophenol in 100 mg. capsules with meals, three times a day. According to her record of that date, her weight was 159 pounds (72 Kg.), the temperature 98.6, pulse 80 and blood pressure 140 systolic, 96 diastolic. By April 24, she had lost 5½ pounds (2.5 Kg.) and the record showed that the temperature was 98.6, pulse 104 and blood pressure 130 systolic, 90 diastolic.

She recalled that during the period while she was taking sodium alpha-dinitrophenol there had been three episodes of yellow tingeing of the sclerae, each lasting about two days. The urine had been a deep yellow brown at all times.

During approximately the last ten days before admission, nausea and diaphoresis had been observed frequently, together with a fever of 101 F. On both the third and the fourth day before admission the patient had attempted to take a capsule of the dinitrophenol but had vomited each time. Examination of her supply of remaining capsules of dinitrophenol and a record of the original number purchased revealed that she had taken 6 Gm. in about twenty days plus 0.2 Gm., which she had attempted to take at the beginning of the present illness but had vomited. She had taken no amidopyrine nor barbiturates during that time.

On admission, the patient was obese and did not appear acutely ill. There was a yellow tinge to the sclerae. The mucosa of the nose and pharynx was inflamed and an ulcer was noted in the right posterior pharynx. There was a dark purple hue and swelling of the gums, with hemorrhagic appearance, and whitish patches about a few teeth. There was swelling and tenderness on the left side of the mandible and in both submaxillary areas. The nodes of the posterior cervical chain were palpable and very tender.

Laboratory examination on admission showed: red blood cells, 3,450,000; hemoglobin, 78 per cent; white blood cells, 1,100, with 1 per cent neutrophils, 4 per cent basophils, 12 per cent monocytes and 83 per cent lymphocytes. The blood culture was negative and bacteriologic examination of smears and

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cultures from the throat indicated nothing of significance. The routine urine examination was negative and the nonprotein and urea nitrogen of the blood were both normal. The icterus index was 10; the direct van den Bergh test showed a delayed positive and the indirect a trace. Three days later the icterus index was 14.4; the direct van den Bergh test showed a delayed positive and the indirect a trace.

During the second day of hospitalization the urine showed an occasional specimen positive for alpha-dinitrophenol according to the indicator test. The Derrien test was also positive. The following twenty-four hour urine was negative to the Derrien test and slightly positive to the indicator test.

On the third day, May 10, a bromsulphalein test for liver function was performed and resulted in 70 per cent recovery thirty minutes after dye injection and 60 per cent recovery sixty minutes after dye injection. There was therefore evidence of impaired liver function.

The following day, May 11, the Derrien test of the urine was negative and the indicator test was impossible because of bromsulphalein interference. May 13 and 14, twenty-four hour urine specimens were again tested but were negative.

Therapy in part administered to the patient consisted of intramuscular injection of 10 cc. of pentnucleotide given once on the day of admission, twice the second day, once the third day, twice the fourth day, twice on the fifth and once on the sixth day, making a total of nine injections.

As soon as the leukopenia was recognized it was decided to give a transfusion and to bleed a number of human donors for the preparation of leukocyte cream according to the method of Strumia.[1] Nine persons were bled for the purpose, about 300 cc. being furnished by each one. Beginning on the day after admission and during the first week, from two to four daily intramuscular injections of leukocytic cream were given. They represent the preparations from a total of approximately 1,800 cc. of whole blood. During the second week five small injections were given, the total of which had been prepared from 300 cc. of blood.

Blood Counts

		Per Cubic Millimeter		Percentage in Differential Count						
May, 1934	Hour	White Blood Cells	Neutrophils	Neutrophils	Eosinophils	Basophils	Mononuclears	Lymphocytes	Myelocytes	Myeloblasts
8	1:30 p.m.	1,100	11	1	0	4	12	83	0	0
	6:00 p.m.	2,375	0	0	0	1	6	92	1	0
9	10:00 a.m.	1,125	11	1	3	10	12	69	4	0*
	4:00 p.m.	1,280	0	0	4	11	25	60	0	0
10	10:00 a.m.	925	9	1	5	6	36	50	2	0
	4:00 p.m.	900	0	0	4	2	32	61	0	1
11	9:30 a.m.	1,750	52.5	3	2	3	44	48	0	0
	4:00 p.m.	2,450	98.0	4	3	1	30	59	2	1
12	10:00 a.m.	2,175	130.5	6	1	3	26	53	1	0
13	10:50 a.m.	4,975	1,443	29	0	1	16	54	0	0
	6:00 p.m.	5,650	2,656	47	0	1	20	20	7	5
14	9:00 a.m.	7,025	3,442	49	0	0	10	27	13	1
	4:00 p.m.	8,150	3,505	43	1	2	15	32	6	1
15	10:00 a.m.	10,450	4,912	47	1	0	3	30	19	0
	4:00 p.m.	10,050	5,327	53	1	0	5	25	14	2
16	10:00 a.m.	10,150	5,481	54	0	1	4	23	17	1
	4:00 p.m.	11,800	7,198	61	2	0	11	24	1	1
17	10:00 a.m.	9,200	6,072	66	0	0	7	27	0	0
	4:00 p.m.	11,400	7,980	70	1	0	11	17	1	0
18	10:00 a.m.	10,900	6,976	64	1	0	8	26	1	0
19	10:00 a.m.	12,250	7,228	59	1	0	13	26	1	0
20	6:00 p.m.	13,000	8,580	66	0	0	5	27	2	0
21	11:00 a.m.	11,400	7,410	65	0	0	7	27	1	0

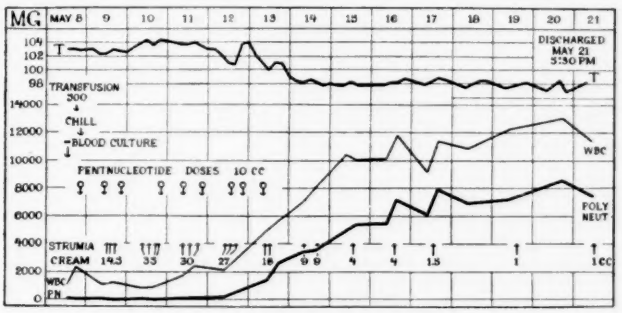
* One per cent plasma cells.

The soporific and analgesic drugs used were codeine mainly, together with one dose each of acetylsalicylic acid, triple bromides and chloral hydrate.

The blood count was done twice daily, during the morning and afternoon, at six hour intervals. On the second day the count revealed: red blood cells 4,800,000, hemoglobin 86 per cent, platelets 240,000; and in the morning, white blood cells 1,125, neutrophils 1 per cent, basophils 10 per cent, eosinophils 3 per cent, monocytes 12 per cent, lymphocytes 69 per cent, metamyelocytes 4 per cent; while in the afternoon, white blood cells 1,280, basophils 11 per cent, eosinophils 4 per cent, monocytes 25 per cent, and lymphocytes 60 per cent.

At no time during these observations was there an absence of granulocytes with the exception of the neutrophils. The percentages of eosinophils and basophils were increased. On the third day the total white count had dropped to 900 with no neutrophils and 1 per cent myeloblasts. The temperature of the patient was 104.4 F. and her general condition was worse.

The fourth day, May 11, the white count doubled and almost tripled that of the preceding day and the neutrophils per cubic millimeter had risen to 52.5 in the morning and to 98.0 in the afternoon. On the fifth day only one observation was made,



Abridged clinical record of M. G., a woman, aged 31, admitted at 12:30 p. m., May 8, 1934. The temperature is indicated by *T*. A transfusion of 500 cc. was given at 6:20 p. m., May 8, followed by a moderate chill at 8:30. A blood culture taken at 1 p. m., May 8, remained sterile. The time of administration of the doses of pentnucleotide is indicated by the arrow points. Leukocyte cream (Strumia) was given by intramuscular injections, the first dose at 12:17 p. m., May 9, and a total of 14.5 cc. in three doses on this day at the time indicated by the arrow points; 35 cc. in four doses on May 10 and on following days as indicated. May 14 there were two injections, each of 9 cc. *W B C* shows the total count of white blood cells. The heavier line below it shows the count of polymorphonuclear neutrophilic leukocytes per cubic millimeter. The count of these cells, May 8, was 11 at 1:30 p. m. and zero at 6 o'clock; May 9, it was 11 in the forenoon and zero in the afternoon; May 10, it was 9 in the forenoon and again zero in the afternoon; May 11, it rose to 52 at 9:30 a. m. and 98 in the afternoon. After this the increase of these cells was more rapid. Definite improvement in this respect was observed therefore about forty-five hours after the first injection of the leukocyte cream.

at which time the white count was slightly lower, though the neutrophils were 130.5 per cubic millimeter. On the seventh day the patient was greatly improved; her temperature was normal, the morning count showed white blood cells 7,025 and neutrophils 3,442, and the afternoon count showed white blood cells 8,150 and neutrophils 3,505. From the eighth day to the day of discharge her white blood count ranged from 9,200 to 13,000, and the neutrophils from 5,327 to 8,580.

She received three intramuscular injections of leukocyte cream prepared from a total of about 300 cc. of blood, on the second, fourth and seventh days after leaving the hospital. The white blood counts during this period were 10,350, 10,600, 17,000 and 8,750, with 43, 78, 57 and 58 per cent neutrophils, respectively. No abnormal white cells were observed.

The patient had a tonsillectomy in 1933 and has had for several years a definite pelvic infection with curettage in 1924 and unilateral salpingectomy in 1926. The present pelvic condition appears to require further surgical treatment. She stated that six months before her white count was found to be 18,000, with 70 per cent neutrophils. The initial symptoms of the dinitrophenol poisoning were attributed by the patient to the pelvic infection and consequently ignored by her.

COMMENT

Hoffman, Butt and Hickey[2] in a preliminary report have listed fourteen cases of neutropenia. Thirteen of these were fatal, and without exception the patients had ingested amidopyrine prior to their illness. The remaining patient recovered. This one had taken 100 mg. of dinitrophenol four times a day for two weeks without other medication. This patient received roentgen and pentnucleotide therapy, as did several of the patients who died. The authors suggest the benzene ring as a common factor in these substances, "all of which have produced neutropenia experimentally or clinically."

1. Strumia, M. M.: The Effect of Leukocytic Cream Injections in the Treatment of the Neutropenias, Am. J. M. Sc. **187**: 527-544 (April) 1934.

2. Hoffman, A. M.; Butt, E. M., and Hickey, N. G.: Neutropenia Following Amidopyrine, J. A. M. A. **102**: 1213-1214 (April 14) 1934.

Our case, with the exception of the positive finding of lymphadenopathy, resembles the eight cases reported by Rosenthal,[3] which he termed "leukopenic infectious monocytosis," a benign form of agranulocytosis. One of his patients had arsphenamine therapy and in the remainder an exogenous toxic factor was ruled out and the cause was assumed to be bacterial. He found monocytosis to be from 14 to 66 per cent, together with a leukopenia of from 900 to 4,200, and neutropenia. Our case showed a monocyte percentage of from 6 to 44.

We feel that there is evidence of dinitrophenol poisoning in this case, since the indicator test showed the presence of dinitrophenol and the positive Derrien test, according to the report of Perkins,[4] indicated dinitrophenol intoxication.

Since the use of dinitrophenol seems to be increasing from the time of its clinical introduction as a metabolic stimulant by Cutting, Mehrtens and Tainter,[5] the need for vigilant supervision of the patient taking this drug requires emphasis. Individual reactions together with their symptoms seem to be exceedingly variable. The record of our patient suggests the wisdom of frequent blood counts during the administration of drugs of this type. Early recognition of a leukopenia may avert an impending tragedy.

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ANURIA FOLLOWING DIABETIC COMA RELIEVED BY HYPERTONIC SALT SOLUTION

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Deaths from diabetic coma frequently are accompanied by anuria developing from six to twelve hours before death. Such anuria in the aged patient is sometimes due to chronic nephritis. In the young it is usually regarded as due to renal block brought about by the acidosis and the fall in blood pressure. In certain cases vomiting, especially in children, may continue after acidosis, as indicated by the presence of diacetic acid in the urine, has disappeared. The renal irritation, due to diabetic coma and shown not only by the typical coma casts but also in many cases by leukocytes and even red blood cells, may persist and indeed may explain the vomiting, as in the first case to be reported. However the microscopic observations in the urinary sediment are interpreted, the effect of dehydration and loss of chloride due to frequent vomiting must not be overlooked. It is important to investigate the level of the plasma chloride in every case of anuria, since in some instances the administration of hypertonic salt solution is actually life saving. The following three cases illustrate its value:

Relief of Anuria in Diabetic Coma in a Girl, Aged 7 (Case 1)

		Urine		Blood			Treatment			
Date, Dec. 1933	Clinical Condition	24 Hr. Amount, Cc.	Sugar, per Cent	Sugar, per Cent	Nonprotein Nitrogen	Chloride	Insulin Units	Salt Solution, Cc.	50% Dextrose Solution Intravenously, Cc.	10% Salt Solution Intravenously, Cc.
23	Acidosis	...	3.6	0.32	...	...	13			
26	Vomited 720 cc.	175	0.7	0.24	...	...	24			
27	Vomited 360 cc.	360	tr.							
28	Anuria for 35 hours after 6 a. m.; convulsions from 7:30 to 10:30 p. m.	15	2.7	0.57	126	463	20	500	30	10
29	Urine beginning 1 hr. after 50 cc. of 10 per cent salt solution given intravenously	710	...	0.09	118	...	6	...	..	50
31		2,500	2.8	0.10	40	512	22			

REPORT OF CASES

CASE 1.—In a schoolgirl, aged 6 years and 11 months, diabetes developed in December 1933. She entered the New England Deaconess Hospital, December 23, with beginning coma. The skin was dry. She had Kussmaul respiration. The lips were cherry red. The urine contained 3.6 per cent sugar and 3 plus diacetic-acid as well as a trace of albumin, many red blood cells, leukocytes and a few granular casts. The blood sugar was 0.32 per cent. Acidosis was not far advanced and with 13 units of insulin during the night the urine became sugar free. However, the next morning the sugar returned. On that day she had 14 units and on the following day she again had 14 units. Vomiting began December 26, and the urinary output from December 26 to December 27 fell to 175 cc. From December 27 to December 28 only 360 cc. of urine was excreted and she vomited 360 cc. December 28 only 15 cc. of urine was obtained. That evening at 7:30 p. m. she became cyanotic and stopped breathing, and jacksonian convulsions developed. During the next three hours she had generalized convulsions and was given the following treatment:

1. Thirty cubic centimeters of 50 per cent dextrose solution intravenously.
2. One cubic centimeter of epinephrine hydrochloride, 1:1,000.
3. One-sixth grain (0.01 Gm.) of morphine.
4. Caffeine sodiobenzoate, 3¾ grains (0.24 Gm.).
5. Salt solution, 500 cc. subcutaneously.
6. Ten per cent salt solution, 10 cc. intravenously.

At 11 p. m. the blood sugar was 0.57 per cent, the plasma chloride was 463 mg. and the nonprotein nitrogen was 126 mg. During the succeeding day no urine was obtained and at noon the nonprotein nitrogen was still 118 mg. At 4 p. m., therefore, she was given 50 cc. of 10 per cent salt solution intravenously and within one hour she voided 2 ounces (60 cc.) of urine. From that time on she voided normally and the nitrogen of the blood fell to normal on December 31. She left the hospital, January 11, on a diet of 169 Gm. of carbohydrate, 75 Gm. of protein and 85 Gm. of fat, a total of 1,741 calories, and 16 units of insulin daily. A blood sugar test was 0.08 per cent at 11 o'clock in the morning. April 16, 1934, she was in excellent condition, and the urine was free from albumin, blood, pus and casts.

CASE 2.[1]—A man, aged 24, in whom diabetes had developed in October 1931, entered the Miami Valley Hospital in Dayton, Ohio, at 5 p. m., December 20, in diabetic coma. He had felt weak and drowsy for ten days, had broken his insulin needle and had omitted insulin. Respiration was Kussmaul in type. The skin was dry. He received 215 units of insulin between 5:45 p. m. and midnight and 280 units during the next day. Anuria developed at 2 a. m., December 21. He was given 50 cc. of 50 per cent dextrose because of a blood sugar that had fallen to 0.087 per cent. Anuria continued, until December 22 he was given 60 cc. of 10 per cent saline solution intravenously twice. At this time the blood urea nitrogen was 60 mg. and the blood creatinine was 5.45 mg. Following the administration of the hypertonic salt solution he passed 930 cc. of urine that day and thereafter his recovery was uneventful, although the blood urea nitrogen was still 60 mg. on December 27. January 4, however, the blood urea nitrogen had fallen to 18 mg. and the creatinine to 1.6 mg. He was discharged from the hospital, Jan. 26, 1933, in good condition, having been sugar free from December 28 to that day.

CASE 3.[2]—A woman, aged 48, entered the Brattleboro Memorial Hospital, Jan. 5, 1934, in diabetic coma, following three days of vomiting and diarrhea. During the first twenty-four hours she received 150 units of insulin and thereafter from 20 to 65 units daily. In spite of daily administration of salt solution subcutaneously, from 1,500 to 3,000 cc., some vomiting and diarrhea continued, and the urinary secretion fell to an average of 150 cc. daily. General edema developed, but the patient became anuric on January 11. On this date the nonprotein nitrogen of the blood reached 120 mg. per hundred cubic centimeters. Sixty-five cubic centimeters of 10 per cent saline solution was given intravenously and only 335 cc. of urine was obtained. A second injection of 65 cc. of 10 per cent saline solution was followed by improved urinary secretion, so that during the next five days the urinary output varied from 1,650 to 2,340 cc. She later died from carcinoma of the rectum.

3. Rosenthal, Nathan: Leukopenic Infectious Monocytosis (Benign Form of Agranulocytosis), Libman Anniv. Vols. **3**: 1003-1027, 1932.
4. Perkins, R. G.: A Study of the Munition Intoxications in France, Pub. Health Rep. **34**: 2335-2374 (Oct. 24) 1919.
5. Cutting, W. C.; Mehrtens, H. G., and Tainter, M. L.: Actions and Uses of Dinitrophenol Promising Metabolic Applications, J. A. M. A. **101**: 193-195 (July 15) 1933.

From the George F. Baker Clinic of the New England Deaconess Hospital.

1. Reported through the courtesy of Dr. Benedict Olch, Dayton, Ohio.
2. Reported through the courtesy of Dr. Chester Leach and Dr. E. P. Joslin.

COMMENT

The most important point in these cases, as in the case of a 5 year old boy previously reported,[3] is that salt solution given under the skin and dextrose solution given either under the skin or intravenously failed to produce urinary secretion. When such treatment fails, the physician is apt to consider that nothing more can be done. An analysis of the plasma chloride may then show a low value, which clearly indicates the lack of chloride. In case 1, in a child, the first dose of 10 cc. of 10 per cent sodium chloride solution was ineffective because the amount was too small. Usually 50 cc. of such a solution is necessary and in cases 2 and 3, in adults, totals of 120 and 130 cc., respectively, of 10 per cent salt solution were needed.

81 Bay State Road.

A CASE OF PENTOSURIA OF THIRTEEN YEARS' STANDING

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In their article on pentosuria with a report of twelve cases, Enklewitz and Lasker [1] called attention to the infrequency with which this diagnosis is made. These authors give a summary of the diagnostic data together with chemical studies of the pentose bodies.

The point of interest in the case reported here is the known presence in the urine of a reducing substance for a period of thirteen years, which was finally shown to be pentose. Except for the presence of this reducing body in the urine, the patient is in excellent health.

REPORT OF CASE

F. M. S., a girl, aged 17 years, of Jewish parentage, was 5 feet 3½ inches (161 cm.) tall and weighed 115 pounds (52 Kg.). Except for whooping cough at 16 months, she was in good health until the age of 4½ years, when persistent infection in the tonsils resulted in their removal. At the time, sugar was found in the urine. She was put under the care of a pediatrician of national prominence in a large city. She was hospitalized for ten days. The reports of this period of study are not available but it is known that the reducing substance was thought to be dextrose, and a diagnosis of renal diabetes was made.

Laboratory Data

Date	Diet	Urinary Sugar 24 Hour Quantity	Blood Sugar Fasting	Blood Sugar 1 Hour After Dextrose
3/15	Protein..... 45 Gm. Fat..... 90 Gm. Carbohydrate 75 Gm.	2 Gm.	0.98	...
3/17	Protein..... 45 Gm. Fat..... 90 Gm. Carbohydrate 50 Gm.	3.11 Gm.	0.100	...
3/20	Protein..... 45 Gm. Fat..... 90 Gm. Carbohydrate 100 Gm.	2.2 Gm.	0.100	...
3/24	Protein..... 45 Gm. Fat..... 90 Gm. Carbohydrate 150 Gm.	2.5 Gm.	0.105	...
3/25	35 Gm. of dextrose	Trace	0.94	112

The concentration of the sugar in the urine varied from 0.4 to 0.7 per cent.

No further attention was given to the problem, and the diet was unrestricted.

In March 1926, at the age of 9, she was again hospitalized because of numerous furuncles on the back and in the axilla. These cleared up promptly after surgical attention.

The laboratory data of the study made at this time at St. Vincent's Hospital is given in the accompanying table. It will be noted that all the blood sugar determinations were normal and that the output of the reducing substance was unrelated to the carbohydrate in the diet. The quantity was fairly constant and was highest during the time the patient was on the low carbohydrate diet.

The reducing substance in the urine was again reported as dextrose. The diagnosis of renal diabetes was made, and no dietetic restrictions were imposed.

The patient remained in good health, except for an attack of measles, until December 1932. Following exposure at a football game, lobar pneumonia developed, from which she made an uncomplicated recovery. Sugar was noted in the urine throughout the illness but was not increased in quantity.

Following the publication of the article on pentosuria,[1] a study of the urine was again undertaken. The twenty-four hour quantity obtained was 760 cc. and contained 0.4 per cent sugar, a total output of 3 Gm. for twenty-four hours.

A positive Bial test was obtained. A portion of the urine was then fermented for forty-eight hours and again tested. The reducing substance was still present in the same percentage, and again the Bial test was positive. It reduced Benedict's solution in the cold at room temperature after several hours.

It can be safely assumed that the substance present in the urine is a pentose and the original assumption that it was dextrose was in error.

After at least thirteen years of pentosuria, the patient is in excellent health and her physical development has been in no way retarded. That pentosuria is essentially a harmless anomaly of metabolism may be presumed, and the importance of its recognition from the standpoint of prognosis as well as from the standpoint of the insurability of the individual should be stressed.

1708 Jefferson Avenue.

3. Root, H. F., and Henson, P. D.: Postoperative Suppression of Urine Relieved by the Intravenous Injection of Hypertonic Salt Solution, J. A. M. A. **97**: 540 (Aug. 22) 1931.

1. Enklewitz, Morris, and Lasker, Margaret: Studies in Pentosuria, Am. J. M. Sc. **186**: 539 (Oct.) 1933.

DRUG ERUPTION DUE TO QUININE: RECURRENCE FOLLOWING USE OF CONTRACEPTIVE

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E. W. D., a man, aged 26, consulted me, Nov. 16, 1933, because of a vesicular dermatitis accompanied by intense itching of the scalp, face and neck of thirty-six hours' duration. The eruption began within twenty-four hours after two applications of Kreml hair tonic and consisted of tense, acuminate, split pea sized vesicles filled with a clear to straw colored fluid. There was edema of the scalp and eyes. November 17 his face became swollen and he had nausea, abdominal distress and loose stools.

The patient refused to have a patch test of the hair tonic but agreed to patch tests of the various ingredients. The manufacturer supplied a list of the ingredients and the patch tests were applied to the inner surface of the right arm. The patch containing 39A alcohol (18 Gm. of cinchonidine sulphate to 1 gallon of isopropyl alcohol) gave a definite papulovesicular reaction on an erythematous base which was limited sharply to the area of the patch. Patch tests were then applied containing isopropyl alcohol and dilute quinine sulphate. The test for quinine responded with a marked vesicular eruption, which spread over the entire arm and forearm and was similar to the dermatitis of the face and scalp. The patient was dismissed with a warning regarding the use of quinine.

March 23, 1934, he returned with an edematous vesicular dermatitis involving the penis, scrotum, eyes, cheeks, ears and sides of the neck. He stated that his wife had used a contraceptive (vaginal suppository) the evening of March 20 and that early the following morning he awoke with a severe itching of the scrotum and penis, which were fiery red and swollen. In the afternoon of March 21 the eruption appeared on the face, involving the same areas that had been affected following the use of the hair tonic. The eruption was accompanied by a diarrhea for two days.

Investigation revealed that the contraceptive contained quinine bisulphate and boric acid in a base of oil of theobroma.

COMMENT

A case of dermatitis venenata, in a patient known to be sensitive to quinine, followed the use of a contraceptive suppository containing quinine bisulphate.

CONCLUSION

Contraceptives must be added to the list of causes of dermatitis venenata in cases of obscure etiology.

805 Talcott Building.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.*—ED.

FEVER REGIMEN

Unless excessive, pyrexia is beneficial to the organism attacked by microbial invasion.

The first aim in the treatment of all fevers is causal therapy: i. e., the discovery of the nature of the exciting cause, and the application of whatever specific remedy there may be to jugulate it. Still, no matter what the name or nature of the causative organism is, the care and general management (regimen) of all fever patients is essentially the same.

REST

Complete rest in bed is indicated by even the most moderate degree of pyrexia, for it means (aseptic fever excepted) that the system is engaged in a conflict which, no matter how seemingly insignificant at the beginning, may assume serious proportions, either because of inadequate mobilization of defensive forces in the early stages of the fight or because of secondary invasion by other foes. Indeed, in apyrexial and hypopyrexial infections with a tendency to chronicity, the therapeutic induction of fever (pyretotherapy) is indicated. Whenever, therefore, the body temperature (whether registered by mouth or by rectum) does not go below 99 F. some time during the day or exceeds 99.5 F. at any time of the day, fever regimen should be instituted.

Complete rest means more than merely going to bed. It means securing a person (a nurse) to take care of the patient. It means making the patient comfortable in bed, which is an important part of the art of nursing. It means the use of a urinal and bed pan. It means securing an abundance of fresh air by appropriate ventilation. It means protection against chilling, which is most especially liable to occur when the temperature drops suddenly and the patient is drenched in sweat, when the fever patient leaves the bed for any purpose whatever, and when he is permitted to be in garments wet from involuntary urination. The prevention of bed sores (q. v.), the daily cleansing bath, the alcohol back rub, the occasional changing of position (to prevent hypostatic pneumonia), especially important in the mentally or physically depressed patient, are items so well taken care of by the average trained nurse that the young physician is liable to forget ordering them when a case must be managed without such trained help.

Mental rest also must be enforced. This does not necessarily mean condemning the patient to absolute inactivity. There is occupation therapy appropriate to the fever patient to be resorted to when the temperature is not high, the mind is clear and the patient is quite free from suffering. It must take cognizance of the fatigability of the fever patient's nervous system, must avoid increased heat production by not requiring movement of large muscle groups, and above all must not interfere with the principle of immobilization of infected tissue. It is only by means of suitable occupation therapy that patients can be kept happy and contented in bed such conditions as tuberculosis or endocarditis. Excitement, anxiety and worry must be eliminated as far as possible. This can best be secured by tactful exclusion of visiting, with only such exceptions as may be conducive to the patient's peace of mind.

Securing adequate sleep is an essential part of this regimen. As a rule, fever patients do not sleep well or for many hours at a stretch. They should be permitted to sleep as much during the day as they possibly can. Enforcing hours of quiet for this purpose may render unnecessary the always more or less objectionable administration of hypnotics. Nevertheless, one must not go to the extreme of failing to give an appropriate hypnotic (see Insomnia) when the patient does not secure sufficient sleep in the twenty-four hours; for how much sleep the patient has had during the early days of his sickness may become of as crucial importance to ultimate recovery as how much food he has digested. A patient who is delirious or who may become delirious must never be left alone, even for one minute. In such cases two attendants are required. If this is impossible, the patient should be protected by bed rails against falling out of bed and kept by straps to the wrists and ankles from getting out of bed.

ALIMENTARY HYGIENE

The febrile anorexia may be humored for the first day or two. Then comes the time, if the fever shows a tendency to continue, when skilful feeding to maintain optimal nutrition in spite of the febrile impairment of digestive function comes to be of great importance. Now appetite is a luxury, not a necessity: for a critical stage may have to be passed through when digestive and circulatory functions are at such a low ebb that feeding may need to be all but discontinued.

Administration of Fluid.—A liberal fluid intake is of the utmost importance throughout the course of fever. Fluid should be administered so frequently, as not only to quench but even to prevent the fever patient's proverbial thirst and to keep his tongue moist. It may be taken as an axiom that whenever the patient's mind is clouded he will not be given enough of that which he needs most, namely, water, unless special provision is made for it.

There is no substitute for fresh cold water as a thirst quencher unless it be carbonated water, which is likely to be more efficient because it stimulates the stomach to empty itself. The administration of carbonated fluid is a help in securing more rapid water absorption that should be invoked whenever possible. It is contraindicated by gas distention of the abdomen or by weakness of the heart.

The test whether the patient receives enough fluid is the quantity and color of the urine. The quantity should be recorded as a routine in all very sick patients and maintained above 1,000 cc. in the twenty-four hours, which should always be possible unless the kidney itself is diseased.

When enough fluid cannot be given by mouth, retention enemas of fluid, preferably rendered isotonic by the addition of 5 per cent corn syrup, should be resorted to unless these are contraindicated by necessity for complete enteric rest, as in peritonitis or diarrhea.

When neither oral nor rectal administration is adequate, some form of injection of fluid becomes imperative; and whether this is to be by hypodermoclysis or phleboclysis or possibly, in children, by intraperitoneal injection will depend on the urgency of the indication. Phleboclysis is the only method whereby an adequate parenteral intake of fluid can be maintained for any length of time. These injections should not be withheld until an emergency exists but rather used to prevent emergencies. They should be resorted to as soon as there is an obvious threatening of fluid deficit that cannot be overcome by simpler means. Their prompt and adequate use may save life. The choice of the fluid to be injected depends on the following considerations:

(*a*) Five per cent dextrose solution is the standard injection fluid to antagonize hypohydration.

(*b*) Five per cent dextrose in physiologic solution of sodium chloride should be employed whenever there is hypochloridemia, but only until this is corrected. Continuous injection of this solution introduces an excess of salt into the system.

(*c*) Ten per cent dextrose solution is the one to be injected when parenteral supply of carbohydrate as well as of fluid is required.

(*d*) Twenty-five per cent dextrose solution, in amounts of from 10 to 20 cc. given very slowly every few hours, is to be employed when the heart is failing because of prolonged malnutrition or when dextrose is indicated but the heart is too enfeebled to permit of bulky injections.

Amplified Milk Diet.—Considerations as to Quantity: After the first few days, during which the patient's anorexia may be respected and the patient be given only as much as he cares to take, the diet should be progressively increased—signs of digestive disturbance always being watched for—until the caloric intake is adequate for the needs of the patient. This should, at its minimum be 30 calories per kilogram in the twenty-four hours. A temperature averaging 102 F. adds about 25 per cent, i. e., increases it to about 40 calories per kilogram; still higher fever may add 50 per cent. Hence an adult weighing 70 Kg. (150 pounds) needs at least 2,100 calories, but generally 3,000 calories in twenty-four hours. A protein income of from 65 to 80 Gm. having been provided the remainder is made up chiefly of carbohydrate. Fat is not well taken care of in fever.

An exclusive milk diet is not adequate to provide such an intake. The caloric value of 1 liter of milk is 700; so that 4 liters (1 gallon) would be required to yield 2,800 calories, a quantity that it is obviously impossible to ingest in the twenty-four hours. The most a fever patient can ingest of milk is 2 liters in the twenty-four hours, which at feeding intervals of three hours would require the administration of 250 cc. (a large tumblerful) at a time. This would take care of the protein requirement (1 liter of milk = 30 Gm. of protein, 2 liters = 60 Gm.) and of about one-half the caloric intake (1,400 calories).

Addition of carbohydrate to the extent of 400 Gm. renders the diet adequate ($400 \times 4 = 1{,}600$). A 40 Gm. slice of toast adds about 100 calories; so does a serving of oatmeal or other gruel or of pudding. Eating four crackers yields a similar amount. If the patient receives—to make calculaton easy—one such 100 calory addition with each of his eight milk feedings, 800 calories of the deficit will have been taken care of and it will still be necessary to provide about 800 calories to yield an ample (3,000 calory) diet. If this is introduced in the form of sugar or of lactose (1 teaspoonful = 5 Gm. = 20 calories), 40 teaspoonfuls will be required, a rather large amount to be disposed of. Some of this sugar may be given with the drinks. A tumblerful of orangeade is worth about 100 calories. Lemonade sweetened with 2½ teaspoonfuls of sugar yields 50 calories. If the patient is given six fruit drinks (lemonade and orangeade alternating) every three hours alternating with his feedings, 450 calories can be disposed of. Lactose, less sweet than sugar, may be added to milk (lactose milk, two teaspoonfuls per tumblerful), and sugar may be used to sweeten milk toast or cereal gruel.

The moderate use of fat makes the problem of adequate feeding of the fever patient a practical possibility. One egg adds 70 calories (and seven and one-half eggs yield the amount of iron[1] required in the twenty-four hours), two slices of crisp bacon yield 70 calories, and so do one square of butter or of margarine and two tablespoonfuls of cream. A serving of ice cream is worth 200 calories. One tumblerful of "special" eggnog: 180 cc. of milk (= 126 calories), two eggs (= 140 calories) and two tablespoonfuls of molasses (= 84 calories) yield 350 calories. But it is rather difficult to digest.

Considerations as to Quality: It goes without saying that only the best quality of food may be served to patients. "Spoiled" food, which may produce a transient illness in a well person, may kill a fever patient. Furthermore, food must be palatable and varied. This means that milk should not always be served plain but also as buttermilk, that it may be flavored with "malted milk" or with cocoa (which also adds to the caloric value, 1 cup of cocoa = 200 calories), or with coffee or tea (which lessen it). It may be served in the form of eggnog or of cream soups. It is evident that the skilful administration of an adequate, enjoyable and digestible diet to the fever patient is an important item in the art of nursing and that the longer the fever lasts, as in typhoid, tuberculosis or endocarditis, the greater the responsibility devolving on the nurse as well as the physician to maintain as good a state of nutrition as possible.

It is not necessary that the fever patient be plied with cold food exclusively. He may have, for instance, hot broth in which one or two well beaten eggs may be stirred, or to which croutons (small cubes of toast) may be added, to make it nutritious.

As long as the fever patient's mouth is dry, it is customary to prescribe only liquid or soft food. As soon as the salivary glands have recovered their activity, as indicated by the tongue being moist, dry toast, zwieback and crackers, poached or scrambled eggs, tender meats and other food that requires chewing may be added, thereby greatly facilitating adequate caloric intake.

Coffee and tea may be useful not only as flavoring for food but also as stimulants to the circulation. A cup of hot, black coffee may help a fever patient who is chilly or shivering after a cold bath; but it should not be used for this purpose at bedtime, as it may make the patient restless and sleepless. At that time a hot "toddy" with alcohol is better.

Alcohol occupies a position somewhere midway between a dietetic article and a drug. In the therapy

1. Two liters of milk furnishes less than one-fourth the required amount of iron.

of fever patients it may be employed in one of four different ways, but it should be given only when and as indicated and not in a routine manner:

(*a*) For its caloric value (1 cc. = 7 calories) in the alcohol addict, to whom it needs to be given from the very first in liberal doses (possibly 250 cc. or even 500 cc.) of whisky or brandy or "cologne spirit." Addiction and fever both increase the degree to which alcohol is oxidized and acute disease should never be taken as the opportunity to break a drug habit. Such an attempt may cost the patient's life. In patients difficult to feed, most especially the aged, smaller doses (from one-half to one tablespoonful of brandy or "cologne spirit" every two to four hours) may be given with food.

(*b*) For its stomachic value and the flavoring of food, in the form of wine or brandy (teaspoonful to tablespoonful) added to milk or eggnog.

(*c*) For its narcotic value, to lessen restlessness, sleeplessness or delirium. When the alcoholic addict develops fever he is very prone to delirium, which may require a more powerful narcotic (e. g., paraldehyde).

(*d*) As a "diffusible" stimulant to the circulation when required to bring blood to the skin, before or after cold hydrotherapy, or both, in the form of from 25 to 50 cc. of wine, 15 cc. of brandy (or "cologne spirit") in a wineglassful of water, or from 4 to 8 cc. of aromatic spirit of ammonia also in a wineglassful of water.

Care of the Mouth.—The mouth of the fever patient must be thoroughly cleansed after each feeding. Warm water is the essential thing for this purpose. "Mouth wash" is merely "flavoring" but it makes the procedure more pleasant. Solution of Hydrogen Dioxide, diluted with an equal amount of warm water, helps in cleansing a mouth that is in bad condition. If the patient is too sick to brush his teeth, the nurse must do it for him. A short piece of whalebone (or similar material) around which a pledget of gauze is wrapped dispenses with the necessity of employing the gauze-wrapped finger. False teeth should be kept out of the mouth until the patient receives diet that requires their use; then they should be removed between feedings, cleansed and kept in cold water. The lips of all fever patients should be kept anointed with cold cream or petrolatum. The appearance of sordes, the presence of a heavily coated dry tongue, or a foul mouth reflect on the quality of the nursing care and bring with them danger of painful fissures and ulcers that may make feeding difficult and proper cleansing impossible, and invite infection of salivary glands and even of the middle ear and possibly the mastoid.

When the physician at each visit looks at the patient's tongue, as he always should, he gathers indications not only as to the state of the patient's general condition and the kind of diet that will probably be tolerated but also as to the kind of nursing care he is receiving.

Care of Intestine.—It is the physician's duty to see to it that the food administered is properly digested and its residue adequately eliminated. It is the nurse's duty to keep the physician informed on how well these functions are performed not only by recording the number of stools each day but also their character, if there is any departure from the normal.

When the fever patient's diet is well digested there is a tendency to constipation, which is best corrected by adding cooked fruit and vegetable purees.

When diarrhea is present, the first thing to do is to revise the diet in accordance with the principles laid down in connection with the Therapy of Diarrhea (q. v.). The same is true of tympanites (q. v.). The physician should regularly inspect and palpate the abdomen to detect, at the earliest possible moment, appearance of tympanites and the accumulation of fecal masses.

Physic should not be ordered as a routine but only as and of the kind required. Whenever rectal examination reveals the presence of scybala in the ampulla, an evacuant enema is indicated. If the stools are dry and hard, Liquid Petrolatum (one tablespoonful at bedtime or morning and evening) or a Petrolatum Emulsion (if the patient objects to the oil) should be ordered. The bed patient's tendency to colon atony is best antagonized by stimulants to peristalsis: e. g., Aloe Pills (one or two at bedtime) or Cascara Sagrada (fluidextract, from one-half to one teaspoonful at bedtime; the Aromatic Fluidextract of Cascara Sagrada to be preferred for women and children. Salines, so frequently ordered for bed patients, are less desirable because they do not adequately stimulate peristalsis.

ANTIPYRESIS

Antipyresis is indicated only when the body temperature exceeds 105 F. in a fever with a relatively short course, such as pneumonia, or 103 F. in a prolonged febrile disease, such as typhoid, because such temperatures are in themselves detrimental to the tissue cells. For the reduction of such excessive temperatures, appropriate hydrotherapy offers the only method of real advantage to the patient. Even if these temperatures are not reached, fever patients should from time to time, say, twice daily, be bathed with cool water so as to be refreshed, just as healthy persons refresh themselves by a cool plunge on a hot summer day; and a restless and sleepless patient might be given a cool pack to comfort and quiet him. Indeed, the main object of hydrotherapy, even when the temperature is excessive, is not mere reduction of temperature but improvement in the febrile disturbances of the nervous system and the circulation, the stimulation of respiration and of kidney elimination and, what is most important, the raising of metabolic activity and the increasing of resistance to infection. The latter effects of hydrotherapy may be compared to "opening the drafts so as to permit the fire to burn more briskly."

The essential thing to remember in attempting reduction of excessive fever temperature is that it is not merely a matter of simple temperature equalization between a hot body and a cool medium but a matter of circumventing the heat-regulating mechanism, which tends to maintain the fever temperature by the same means by which normal body temperature is maintained: namely, by peripheral vasoconstriction and increased metabolic activity. The peripheral vasoconstriction must be antagonized, so as to bring the hot blood from the interior of the body under the influence of the cooling medium; this is generally accomplished by appropriate covering in the "packs" or by vigorous rubbing in the baths. By such means these procedures are made less disagreeable as well as more efficient, not only by exposing the blood to the cooling influence but also by preventing shivering with the its excessive heat production. During the procedure the skin must be kept red as constantly as possible; and, at the end of it, left red, warm and moist; i. e., in the best condition for heat elimination. If the skin is permitted

to stay pale during the bath and allowed to remain pale and cold at its conclusion, the patient feels miserable and shivers, and presently the temperature may be higher than it was before the bath.

The Choice of the Antipyretic Procedure. — This depends on the condition of the skin, of the general circulation, of the kidneys, and of the nervous system.

When the skin is hot and dry, reduction of temperature is relatively easy; mere moistening with tepid water (85 F.) will give the patient comfort. When the skin is cold, the blood must be made to flow into the skin by preliminary use of heat (105 F.) with friction or, if this fails, by a mustard pack or bath, supported by a stimulant to the circulation (coffee or alcohol). Cold should never be applied to a cold skin.

The feebler the circulation, the gentler must be the procedure. One should beware of using heroic hydrotherapy in a collapsed patient, even if the internal temperature is very high.

When nephritis is present as a complication, prolonged tepid (85 F.) baths should be used, rather than cold procedures.

When the nervous system is depressed, the sudden impact of cold water and vigorous rubbing are invaluable to arouse the patient, to make him breathe better, and to take nourishment more readily. When the patient is restless and sleepless, a suitable cold wet pack is the best sedative that can be prescribed for the fever patient.

The following hydriatric procedures, arranged somewhat in order of increasing severity and antipyretic efficiency, may be needed to meet these various indications:

(*a*) The cold head-compress.
(*b*) The antipyretic pack.
(*c*) Antipyretic ablution, or "sponging."
(*d*) The sheet bath.
(*e*) The half bath.
(*f*) The full bath.

(*a*) The cold head-compress is the single most universal hydriatric procedure in fever. It should, without exception or special order, accompany all antipyretic procedures. This compress is useful by itself to lessen febrile headache and to quiet the delirium of the fever patient. It is a wet towel, well wrung out of ice water, applied to the head like a turban. To be kept cold it must not be covered, and it should be changed frequently (as often as it warms up) unless an ice-cap is included, which should be done in all severe cases.

It is a general principle in all hydrotherapy to keep the head cool and the feet warm. Hence, whenever there is a tendency for the feet to be cold, a properly protected hot water bag should be kept near them, as a routine accompaniment of all other procedures.

(*b*) The most useful form of the antipyretic pack is the "trunk compress." It is mild enough to be used even for children and collapsed patients, and it is of value even in cases presenting very high temperatures in the intervals between the more radical procedures. The cold trunk compress for the child is a Turkish towel, for the adult a sheet folded so as to extend from the axilla to the hips and all round the body. It is wrung out of water at 60 F., covered with dry flannel (but not water proof), and changed every two hours for temperatures above 104 F. It is changed every hour for temperatures above 105 F. and removed when the temperature falls below 103 F. In a fever with a long course, the temperature points may be set 1 degree lower. If the trunk compress has not warmed up when changing is due, it should not be changed. If the skin is cold to start with, a mustard pack should be employed.

The anterior trunk-compress differs from the foregoing in that the wet cloth covers only the front and the sides to the posterior axillary lines, while the dry flannel covering extends round the patient. It is to be preferred because less disturbing when the patient is very sick and frequent changing is necessary. When changing is due, the flannel covering is opened and the fresh compress slipped in place.

For children and very sensitive patients the graduated trunk compress may be ordered. The first application may be at a neutral temperature (90 F.) to avoid shock and fright; and the temperature of subsequent compresses should be reduced progressively by 5 degrees F. each time until the desired result has been secured.

The cold wet pack is indicated in conditions of febrile restlessness and sleeplessness. It includes the patient's arms and shoulders as well as the legs down to the knees, the sheet being placed in such a way that wet sheet is between adjoining skin surfaces at all points. The sheet, having been lightly wrung out of water at about 60 F. is placed on a dry woolen blanket and both are put underneath the patient so that the wet sheet is next to him. The patient then raises his arms above his head and half of the sheet is drawn across his body and tucked alongside the trunk and between the legs. Then the patient brings the arms down to his side and the other half of the sheet is brought around the body, covering the arms and shoulders and the rest of the body, its border being tucked in along the opposite side. Finally the woolen blanket is brought together in such a way as to make snug closure, most especially about neck and shoulders, and tucked under the feet so as to keep "air from getting at the wet." If a patient is chilly, additional covering may be used. Should the patient go to sleep in the pack, he is not disturbed. Otherwise the pack might be changed after it has thoroughly warmed up, possibly in an hour or two.

The "mustard pack" is a modification of the wet pack, consisting of the use of hot (105 F.) water to which mustard (one heaping tablespoonful per liter) has been added for wetting the sheet (doubled up for this purpose). A dry blanket surrounds the wet sheet, particularly snug closure being made about the neck to keep the mustard fumes from affecting the patient's eyes. Every five minutes the skin is inspected for reaction, which first occurs on the surface on which the patient lies; and within fifteen to thirty minutes the application should be removed. This powerful appeal to redden the skin should be used whenever, in antipyretic hydrotherapy, redness cannot be brought to the skin by other means. A suitable ablution should be used as a finishing procedure to free the skin from the adhering mustard particles.

(*c*) Antipyretic ablution ("sponging") is the simplest and most commonly employed, but also mildest, measure. It may fail to make an impression on high or stubborn temperatures. It is, nevertheless, a useful preliminary to more powerful procedures, serving as a test of the patient's reactive capacity. The mattress is protected by water-proof material (oil cloth or mackintosh) covered with a blanket and a linen sheet that have been placed underneath the patient. After the head-compress has been applied and the patient's face

has been bathed with cold water, such water (at about 60 F.) is freely thrown on the arms down to the elbow, the trunk both front and back, and the lower extremities down to the knees. A crumpled piece of gauze or the hollow of the hand may be used for carrying the water, which is dashed on the skin with one hand while the other hand carries out a continual chafing movement until the treated part warms up. Then another portion of the body is attended to and this is continued until all parts have been treated, special attention being given to the back, which is the hottest as well as the best reacting part of the fever patient's body. The surface is gone over in this manner two or three times until the temperature has been reduced, but never below 101 F., as it may sink further subsequently. The procedure should be ended earlier when it is found that the skin does not warm up readily under the rubbing. As finishing treatment, the patient is not dried at all if he is vigorous but merely rolled onto a dry sheet, the wet bed coverings being simultaneously withdrawn. If he is less vigorous, he is gently dried by wiping off excess of fluid but leaving the surface somewhat moist. If the patient is very sensitive, small portions of the body at a time are treated, dried, and covered immediately. If sedation is aimed at, the procedure might be finished by means of a general wet pack to keep the temperature from going up too rapidly and to lessen the number of spongings required. Trunk compresses may also be used for this purpose.

"Hot sponging," at 105 F., of portions of the body at a time followed by a warm (100 F.) alcohol rub may give satisfactory results as an initial procedure for very nervous patients, especially children. The temperature of the water and of the alcohol may be progressively lowered at subsequent treatments, as judgment and experience indicate.

(*d*) The sheet bath is intermediate in potency between the ablution and the tub bath, for which it serves as a valuble substitute when a suitable tub is not available. It should be resorted to when the "sponge" is inadequate to reduce excessive febrile temperature satisfactorily. With the bed prepared as directed for "ablution," a sheet partly wrung out of water, ranging in temperature from 80 down to 50 F. according to indications, is placed underneath the patient and wrapped about him so that no two body surfaces are in opposition without wet sheet between them. Then the sheet is chafed until it warms up, whereupon cold water (60 F.) is dashed on by means of a cup and the sheet is again briskly rubbed and patted until "reaction" takes place, as indicated by warming up of the sheet. Then this process is repeated on another part of the body, and the entire surface (arms and legs excepted) is gone over and over again until the sheet does not warm up as readily as it did, until the patient shivers, or until the temperature has been reduced to 101 F. The procedure may be finished as discussed under "ablution."

The "ice rub" is the sheet bath modified by using a lump of ice, partly wrapped in cheese-cloth and passed over the surface with one hand while the other strokes and pats the part just treated with the ice for not more more than fifteen seconds in any one place. It adds severity and efficiency to the sheet rub.

"Cold sprinkling" may often be successfully employed instead of a tub bath, when a tub is not available. In the emergencies of "heat stroke" it should be carried out wherever the patient with hyperpyrexia is found and even before he is transported to the hospital, where recurrence of the high temperature may call for its renewed use. Sprinkling may be carried out in bed by raising the head of the bed about 1 foot from the floor and placing a rubber sheet (covered with a linen or cotton one) under the patient in such a way as to provide for drainage into a tub or pail. To keep the mattress from sagging, three boards the width of the bed may be placed under it. The sprinkling can should have a rather large rose nozzle and should be held 2 or 3 feet above the patient. A sprinkling hose attached to a hydrant may be employed, but of course excessive force of water impact should be avoided. Constant active friction must be kept up throughout the procedure. The sprinkling should be stopped from time to time to permit "reaction" to take place, and when this finally does not occur as readily as it did before or when the temperature has been reduced to 101 F., one of the finishing procedures is employed.

(*e*) The half bath is given in a tub containing water that reaches to the navel when the patient is sitting. While "tubbing" is always more or less troublesome for helpless adult patients, it is so easily carried out for small children that for these it should be the antipyretic procedure of choice, whenever the trunk pack proves inadequate.

Half baths may be prescribed as follows: "Neutral half bath (at 95 F.) for five minutes with constant friction. Finish by cool affusion (at 75 F.), followed by gentle drying."

For a more vigorous effect one might prescribe: "Cool half bath (at 75 F.) for ten minutes with friction. Finish by cold affusion (60 F.) to neck, back and chest. Dry lightly."

In febrile collapse, when the skin is pale and cool and the pulse rapid, one might prescribe: "Hot half bath (at 105 F.) for five minutes, until skin reddens. Finish with brief sprinkling (from sprinkling can) of nape of neck with cool water (at 75 F.). Rub dry."

Still more powerful a stimulant to the skin is the "mustard bath": Powdered mustard (one tablespoonful to the gallon) is mixed with a little water to form a thick paste and this is folded in a towel in such a way as to form a bag, which is hung in a hot (105 F.), warm (100 F.) or neutral (95 F.) half bath for five or ten minutes, until the bath is sufficiently impregnated with oil of mustard. To protect the patient's nose and eyes a sheet may be thrown over the tub. The patient is bathed until the skin reddens.

(*f*) The full bath is one that reaches to the bather's chin. It must always be given with friction: "Rubbing is the keynote to successful tubbing." Two types may be recognized: the graduated bath and the full cold bath.

The graduated bath ("von Ziemssen bath") is given in a tub one third full with water at 90 F. and accompanied by constant rubbing until the skin reddens. Then bucketfuls of cold water are added, so as not to impinge directly on the patient, until the temperature is lowered to 75 or even 70 F. in the course of half an hour. It may be finished with a cold (60 F.) affusion to the back of the head.

The full cold bath ("Brand bath"), the most powerful hydriatric procedure, has made a special reputation for itself in the prevention and treatment of the "typhoid" state (not only of that which occurs in typhoid). It is much more stimulating than the von Ziemssen bath. One might prescribe it at first as

follows: "A full bath at 85 F. with constant rubbing (abdomen excepted in typhoid) for five minutes with cold (60 F.) affusions to head and back of neck for last two minutes followed by light drying."

If after such initial baths the temperature continues to rise and is not kept within bounds by these given every four to six hours, the temperature of the bath water is lowered to 75 F. and the duration increased up to ten minutes, provided the patient reacts adequately. The feebler the patient, the briefer must be the duration of the bath, which makes the stimulating effect greatly overshadow the temperature reducing action.

"ELIMINATION"

Perhaps the least objectionable routine medication in fever—if routine medication there must be—is the administration of a diuretic. While it is extremely doubtful that the fever-producing toxins are sufficiently diffusible to be flushed out of the system by way of the urine, it is probably of advantage to the kidneys to secrete urine of lesser rather than of higher concentration: it might possibly lessen the danger of nephritis as a complication. The old fashioned "fever mixtures" handed down with such reverence for tradition by one generation of clinicians to another are nothing more or less than diuretics. It remains to be shown—though the possibility is not denied—that they are superior in value to simple and single agents. Of the various diuretics, the one that might be preferred is Sodium Citrate (prescription 1), which is a veritable fever "polychrest," being diuretic, expectorant, and in limit doses also laxative. Furthermore, it is an indirect alkali, i. e., increases the alkali reserve of the system without neutralizing gastric juice, and it well may be that by antagonizing febrile acidosis it improves systemic functions in general and possibly thus even favors antimicrobial resistance. To secure these effects one must push it up to the limit of tolerance, which is usually set by either the stomach or the bowel. To minimize the production of nausea and possibly vomiting, each dose should be given in a glassful of fluid, preferably fruit juice: such as lemonade, orangeade or grapeade. When it causes nausea in spite of this dilution or if it produces diarrhea, its dose needs to be lessened. It is believed to decrease the coagulability of the blood, possibly by inactivating calcium, which may also be the reason why its use is occasionally followed by urticaria.

PRESCRIPTION 1.—*Sodium Citrate*

℞	Sodium citrate	30.00 Gm.
	Water	30.00 cc.
	Strawberry syrup to make	120.00 cc.

Mix. Label: Teaspoonful in glassful of water or fruit juice every two hours.

RELIEF OF DISTRESS

The medicinal antipyretics, more appropriately termed "fever narcotics," differ fundamentally from antipyretic hydrotherapy in that they depress metabolism while lowering febrile temperature. As this depression may also mean a lessening of resistance, they should not be employed merely for the purpose of temperature reduction. They are useful, however, for the relief of the discomforts of fever such as headache and general aching, restlessness, sleeplessness, and impairment of digestion, especially because such comfort can generally be secured from doses inadequate to reduce the body temperature markedly or to produce untoward results, such as excessive sweating or collapse. They should be given merely as required for the relief of these symptoms, which are usually most marked at the beginning of fever, and should be discontinued as soon as these symptoms are no longer complained of.

It is of advantage to distinguish between three groups: (*a*) quinine, (*b*) salicylates and (*c*) pyrazol-paramidophenol compounds.

(*a*) Aside from its specific value in malaria (q. v.), quinine lowers temperature by depressing metabolism, slows the pulse, relieves neuralgic pains, and quiets the nervous system. By these effects it may favor a good night's sleep in a fever patient who might otherwise be restless and sleepless, and it might be given at bed time for this purpose, 0.3 Gm. capsules of Quinine Hydrochloride every hour for two or three doses, administration to be discontinued if the ears ring. For children, Quinine Ethylcarbonate (euquinine, prescription 2) is preferable.

PRESCRIPTION 2.—*Quinine Ethylcarbonate*

℞	Quinine ethylcarbonate	5.00 Gm.
	Aromatic syrup of eriodictyon	60.00 cc.

Mix. Label: Shake the bottle, and give teaspoonful at bedtime. (For child 5 years old.)

(*b*) While in rheumatic fever (q. v.) salicylate has a special value and is pushed to the limit of tolerance, preferably in the form of sodium salicylate, Acetysalicylic Acid may be employed in 0.3 Gm. capsules for its analgesic value every two to four hours (as required) to relieve aches and pains, provided it does not cause excessive sweating.

(*c*) The cheapest and most active of the pyrazol-paramidophenol compounds, acetanilid, is best given in unit doses of 0.1 Gm. capsules or tablets every hour or two until the patient is relieved. The administration is at once discontinued if pallor, cyanosis, faintness or tachycardia is produced. Acetphenetidin, in twice the dose, produces almost identical effects, excepting that these are slower in appearing and there is less tendency to cyanosis and faintness. It is best given in 0.3 Gm. capsules or tablets at intervals of two to four hours as required. Amidopyrine, given in doses of 0.3 Gm. tablets every two to four hours, has of late been suspected of the possibility of producing neutropenia. Hence, while patients are given this drug, the leukocyte count should be particularly studied. A periodic leukocyte count should be routine, however, in every fever patient, no matter how treated. Antipyrine is the one of this group that is sufficiently soluble to be administered in liquid dosage form; hence it is suitable for children (prescription 3). As it may be irritative to the stomach when given in solid dosage form, it should always be prescribed in solution. It is the only one of these that may be given as an enema if oral administration is impossible.

PRESCRIPTION 3.—*Antipyrine*

℞	Antipyrine	2.00 Gm.
	Syrup of raspberry	60.00 cc.

Mix. Label: Teaspoonful every two hours as required. (For child 3 years old.)

COMBATING PYREXIAL COLLAPSE

At the bedside of every fever patient stands the dread specter of collapse, commonly due to primary paresis of the blood vessels, especially of the capillaries. It is probably the result of direct poisoning of the histiocytic system by bacteria deposited there from the blood stream. All the previously discussed regimen includes a recognition of this danger of collapse and aims, as far as possible, at its prevention.

For appropriate therapy it is necessary to distinguish between primary myocardial failure and vascular collapse. In certain diseases, e. g., diphtheria, myocardial involvement is the anatomic substratum of the sudden appearance of often rapidly fatal heart failure, which may occur even when convalescence seems assured. For the treatment of this condition, see Acute Myocarditis. In vascular collapse, the first territory to be attacked is the splanchnic, so that with blood accumulating there the skin becomes pale and cool, and the heart, attempting to keep the gaping blood ways filled, beats faster and faster. At first there is but little lowering of the blood pressure. When the vasomotor center fails, probably owing to insufficient circulation in it, a vicious circle develops and the blood pressure becomes greatly depressed: a serious second stage sets in, which is characterized by paresis of the skin capillaries with development of cyanosis of the lips and nose, finger tips and toes. When finally the heart itself fails from malnutrition and overwork (a second vicious circle) and the pulse becomes irregular—sometimes, at intervals only—the condition is desperate indeed.

If the foregoing characterization of events is correct, the physician must aim at forestalling the development of the vicious circles referred to. On the other hand, circulation stimulants should not be employed too early or unnecessarily, because some, such as digitalis, may by cumulative action produce intoxication and also because they may call out a display of stored energy when it is not required and fail to do so when this is needed.

Digitalis.—The employment of digitalis when the pulse commences to become rapid is based on the relative slowness with which—unless it is used in heroic dosage or by injection—its effects are secured. One may start from 1 to 2 cc. of the Tincture of Digitalis or with 0.1 to 0.2 Gm. of Digitalis Leaves (in capsules) given every eight hours. It should not be continued in these doses for more than three or four days unless the patient is under close observation. In either case the dose should be lessened or stopped as soon as improvement is secured, as evidenced by better quality of heart sounds, better pulse quality (the rate may not be lessened), improvement in blood pressure, or when the pulse becomes slow or irregular, or if nausea and vomiting ensue. In view of the efficiency of the official preparations made by reliable manufacturers, it is inexcusable to prescribe higher priced proprietaries on the basis merely of high pressure salesmanship; nor is there any justification for prescribing the injectionable preparations that are required in an emergency, unless such an emergency really exists, and then only during the emergency, to be followed by oral digitalis administration. For injection purposes, if digitalis has not been given previously, strophanthin may be injected intravenously very slowly, in doses of from 0.25 to 0.5 mg., preferably in 10 cc. of 25 per cent solution of dextrose once daily every third day: or, if given daily, for not more than three days. Digitalis administration should have been discontinued for two or three days before the injection of strophanthin.

Camphor.—Because of the possibility that it may have a favorable stimulant action on the peripheral circulation with a quieting effect on the central nervous system, camphorated oil (20 per cent) injected intramuscularly in large doses (5 cc.) is recommended once or twice a day to establish a depot from which this agent of otherwise but fleeting action may gradually be absorbed. It is probably contraindicated when there is evidence of myocardial failure.

Caffeine Sodiobenzoate.—Five-tenths gram of caffeine sodiobenzoate in 2 cc. of ampule water given intramuscularly may be special value in cases in which there is also cerebral depression. Its effect is rather fleeting and it may have to be repeated several times daily. Cupfuls of "black" coffee may be given as a retention enema.

Strychnine Nitrate.—In doses of 2 mg. hypodermically given every two hours or even every hour, until the pulse is slowed or the reflexes are exaggerated, strychnine nitrate is too well established clinically to be discarded as an available stimulant on the basis of negative experiments on healthy animals. It may possibly act indirectly by stimulating suprarenal secretion.

Solution of Epinephrine.—In doses of 0.5 to 0.75 cc., Solution of Epinephrine, preferably administered in dextrose phleboclysis, may be of telling but unfortunately transient effect. If there is myocardial weakness, one must be careful not to overwhelm the heart with a large bulk of injected solution, and it is at such a time that the epinephrine might with advantage be added to the hypertonic (25 per cent) dextrose solution injected slowly in quantities of from 10 to 20 cc.

Atropine Sulphate.—From 0.5 to 1 mg. of Atropine Sulphate, given hypodermically every two to four hours up to the pharmacologic effect (dryness of the mouth, dilated pupils), is especially indicated in collapse with "leaky" skin such as may occur during a crisis in pneumonia. After its use, improvement in the circulation must be judged by the increased determination of the blood to the skin rather than by slowing of the pulse, for atropine in liberal doses may accelerate the heart beat while improving circulatory conditions.

Volatile Agents. — So-called diffusible stimulants, such as alcoholic liquor and Aromatic Spirit of Ammonia, have been discussed under alcohol. Amyl nitrite inhalation (0.3 cc. glass capsules) may be tried in an effort to bring blood to the skin, especially in an attempt to check a chill.

Mechanical Means.—Methods of improving the distribution of the blood, such as elevation of the foot of the bed in vasomotor collapse or propping the patient up in bed in myocardial failure, should not be neglected in desperate cases. In sudden vascular collapse, centripetal massage of the limbs followed by snug bandaging from the feet to the hips and a tight abdominal binder may help tide a patient over a critical condition.

The very number of means employed in stimulating a failing circulation indicates lack of a really satisfactory remedy. The patient should not be plied with them indiscriminately but should rather receive them in accordance with one's knowledge of their pharmacologic action and special indications and with critical evaluation of results, whether good or bad.

TREATMENT OF CONVALESCENCE

When the temperature has become normal, the question of how rapidly the patient may get up and out of bed and back to work becomes important. As a general proposition, the convalescent patient feels better than he really is. It is a good rule to continue absolute bed treatment for as many days of normal temperature as there have been days of abnormal temperature. This rest period must be greatly extended in diseases with a tendency to the development of chronicity or of com-

plications. Thus, in acute rheumatism or in acute nephritis, weeks rather than days of bed treatment are required; in acute endocarditis or in tuberculosis, months rather than weeks. When there is a definite tendency to serious complications during convalescence, as the myocardial failure of diphtheria or the nephritis of scarlet fever, the patient should be kept in bed for several weeks, even though he seems perfectly well.

The presence of even a slight rise in temperature day after day may be one of the troubles of a convalescent. It usually indicates a focus of infection or a complication that requires being sedulously searched for. Sometimes constipation or the premature assumption of a general diet is the cause of the rise in temperature, so that its occurrence indicates revision of diet and possibly the administration of a laxative.

In cases in which subfebrile temperature continues and in which the blood picture and all other tests for complicating infection are negative, the possibility of a residual excessive irritability of the heat-regulating center may be tested for by the administration of amidopyrine (0.3 Gm. tablets every hour for not more than three doses), the effect of each dose being observed to forestall collapse. The temperature may not only go down but stay down. In this manner prolonged sanatorium treatment has sometimes been shown to be unnecessary.

Scarcely less important than the temperature record in the management of convalescence is the pulse rate. As long as this goes up at the least exertion or after the slightest excitement, rest rather than exercise is indicated.

When the patient seems ready to be permitted to get up, the transition should be made the more gradually the more severe, prolonged or exhausting the disease has been. After a prolonged sickness, when the leg muscles have become very much weakened, the patient may be encouraged to exercise the legs by punching with them a pillow laid at the foot of the bed. Sitting up in bed with the aid of a back rest is generally the first order for a patient after long continued recumbency. At first this may have to be but for a short time, as the patient may get tired very easily. Next the patient is helped to get into a chair at the side of the bed and sit there for say five minutes, possibly twice a day, morning and evening, while the bed is being made. The time spent out of bed may usually be doubled daily; and, after a few days, the patient may be assisted in taking walking exercises. During all first exertions of convalescents, one must be on the lookout for dizziness, faintness or even fainting. This is especially apt to occur when a patient rises quickly for defecation or urination. Stair climbing and walking in the open are all items of exercise to be carefully planned and graded. Before a convalescent is exposed to the inclemencies of weather, he should be subjected to a graded course of hydriatric hardening procedures. No greater error can be made than to send a feeble convalescent on a trip to the distant South before he is well able to get around and take care of himself. Then a vacation of weeks or months before returning to work is of great advantage.

Diet.—A convalescent usually develops a good appetite, and this should be appeased with discretion. The mistake is often made at this time to feed the patient beyond his digestive capacity, and the resulting indigestion may give rise to feeding problems that may delay recovery of strength.

Tonic.—The anemia usually present in the convalescent indicates the administration of iron, which may be given in the form of Pills of Ferrous Carbonate (Blaud's pills), of which one or two may be taken three times daily after meals. For children, the Saccharated Ferrous Carbonate may be prescribed in the form of 0.3 Gm. powders or of tablets, to be chewed like candy. If a liquid administration form is desired, Iron and Ammonium Citrate (prescription 4) meets all requirements. For infants and small children the Syrup of Ferrous Iodide, given in drop doses in the feedings, usually furnishes adequate iron intake.

PRESCRIPTION 4.—*Iron and Ammonium Citrate*

℞ Iron and ammonium citrate..... 10.00 Gm.
Syrup of orange.....to make 120.00 cc.
Mix. Label: Teaspoonful in water three times daily after meals.

PRESCRIPTION 5.—*Arsenic and Mass of Ferrous Carbonate*

℞ Arsenic trioxide..... 0.06 Gm.
Strychnine sulphate..... 0.06 Gm.
Mass of ferrous carbonate..... 10.00 Gm.
Mix and divide into thirty pills. Label: One three times a day after meals.

If the patient's appetite is slow in returning, the addition of arsenic to the mass of ferrous carbonate may be of advantage. Whether or not strychnine favors the return of "pep," the fact is that it is frequently added to "tonic" medication. If used, it should be prescribed in pill form (prescription 5) rather than in the form of such an abominably tasting liquid as the Elixir of Iron, Quinine and Strychnine.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

DEXTROSE (See New and Nonofficial Remedies, 1934, p. 270).

The following dosage forms have been accepted:

Dextrose Solution, 25 Gm., 50 cc.: A solution marketed in bottles and containing anhydrous dextrose 25 Gm. in sufficient distilled water to make 50 cc.

Prepared by the United States Standard Products Co., Woodworth, Wis.

Dextrose Solution, 50 Gm., 100 cc.: A solution marketed in bottles and containing anhydrous dextrose 50 Gm., in sufficient distilled water to make 100 cc.

Prepared by the United States Standard Products Co., Woodworth, Wis.

TRIETHANOLAMINE-CRUDE (See New and Nonofficial Remedies, 1934, p. 203).

Triethanolamine-Carbide and Carbon Chemicals Corporation.—A brand of triethanolamine-crude (N. N. R.).

Manufactured by the Carbide and Carbon Chemicals Corporation, New York.

TUBERCULIN-KOCH (See New and Nonofficial Remedies, 1934, p. 384).

Parke, Davis & Company, Detroit.

Tuberculin for the Mantoux Test.—A filtrate from bouillon cultures of both human and bovine strains of Bacterium tuberculosis containing 50 per cent of glycerin as a preservative. Marketed in packages of two 10 cc. vials, one containing 0.01 cc. tuberculin old, and the other 10 cc. of diluent.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 18, 1934

ANTIHORMONES

In 1921 Harvey Cushing [1] delivered a notable address before the Association for the Study of Internal Secretions, in which he took severely to task those who would apply to therapeutics the contributions then but recently made in endocrinology. The association, he warned, "must discountenance the exploitation of the few discoveries which have already been made by those who recklessly under full sail plow through a fog bank of therapeutics, their horns tooting." Thirteen years ago, active glandular extracts were few and most endocrine therapy was "polyglandular." Today, however, there are many pure or nearly pure extracts the effects of which are fairly well known and more or less controllable. It was thought that these preparations must surely at last provide effective means for the treatment of disease; and they have been extensively (even incautiously) employed for this purpose. Thus, modern therapeutists have not heeded the excellent advice of Dr. Cushing; they have indeed been led "to embark glandward ho!" Little did they realize, however, how jealously nature guards our body economy, for, as Collip and his associates [2] have just shown, there are "antihormones."

Potent endocrine preparations are often administered to patients and frequently the desired effects may be attained; but, curiously, an individual here and there, who should promptly be cured by this extract or that, not only fails to improve but occasionally even becomes worse. The dose is increased without effect; the preparation is then condemned or the patient given up as hopelessly refractory. Now comes an answer to those who have been reckless enough to believe in the endocrine millenium. The organism does not so readily accept assaults on its glandular equilibrium—not without a struggle—it produces antihormones.

Zondek [3] and subsequently other investigators have pointed out that injection into animals of anterior pituitary-like principle from urine of pregnancy results first in increase in the size of the ovaries, followed by regression to normal dimensions despite continued administration. Injection of this principle into rats over a sufficiently long time may lead to diminution in the size of the ovaries even to less than normal.[4] This loss of sensitivity appears to be specific for the factor administered, as ovaries refractory to the anterior pituitary-like principle will still respond to preparations of the anterior pituitary itself.[4] The reverse also has been demonstrated.[5] Hertz and Hisaw,[6] using an ovarian follicle stimulating fraction from the anterior pituitary,[7] noted that during repeated injection of their extract into young rabbits the ovaries, which at first were enlarged about fivefold, gradually regressed to their original size. Further injection of the extract failed to elicit any ovarian response; the glands became refractory and even after two or three months did not undergo normal development. The injection of subthreshold doses, insufficient to induce a detectable morphologic change in the ovaries, also caused the latter in most cases to become resistant to the subsequent injection of large and usually effective amounts of the follicle stimulating factor.

Other examples of such phenomena are known. It has been claimed that the continuous administration of an extract of the corpus luteum cannot maintain the endometrium of the rabbit in a stage of progestational proliferation for more than about seventeen days.[8] Thereafter, despite further injections, the mucosa atrophies. Such reactions are not limited to the gonads and accessory reproductive organs. Loeb and Friedman [9] for instance, reported that guinea-pigs rapidly lose their sensitivity to the thyroid stimulating factor of the hypophysis, and recently, through the efforts of Collip and his associates,[2] other instances have come to light. In fact, these investigators have established the presence of specific antagonistic substances in the blood stream, which Collip has designated by the name already mentioned.

On injection of the thyrotropic principle of the pituitary into animals, hyperplasia of the thyroid gland occurs and the metabolic rate rises sharply. However, continued injections of the extract do not maintain this condition; the metabolic rate returns to normal in two or three weeks and may even go below normal. The animals fail to respond subsequently to doses even as large as eight times the previously effective dose.

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2. Collip, J. B.: Some Recent Advances in the Physiology of the Anterior Pituitary, J. Mount Sinai Hosp. **1**: 28 (May-June) 1934.
3. Zondek, Bernhard: Die Hormone des Ovariums und des Hypophysenvorderlappens, Berlin, Julius Springer, 1931.
4. Selye, Hans; Collip, J. B., and Thomson, D. L.: Loss of Sensitivity to Anterior Pituitary-Like Hormone of Pregnancy Urine, Proc. Soc. Exper. Biol. & Med. **31**: 487 (Jan.) 1934.
5. Selye, Hans; Collip, J. B., and Thomson, D. L.: Loss of Sensitivity to the Gonadotropic Hormone of the Hypophysis, Proc. Soc. Exper. Biol. & Med. **31**: 566 (Feb.) 1934.
6. Hertz, Roy, and Hisaw, F. L.: Effects of Follicle Stimulating and Luteinizing Pituitary Extracts on the Ovaries of the Infantile and Juvenile Rabbit, Am. J. Physiol. **108**: 1 (April) 1934.
7. Fevold, H. L.; Hisaw, F. L.; Hellbaum, A., and Hertz, Roy: Sex Hormones of Anterior Lobe of the Hypophysis: Follicular Stimulating Factor, Am. J. Physiol. **104**: 710 (June) 1933.
8. DeFremery, P.; Luchs and Tausk, Arch. f. d. ges. Physiol. **231**: 341, 1932 (cited from Collip [2]).
9. Loeb, Leo, and Friedman, H.: Exophthalmos Produced by Injections of Acid Extract of Anterior Pituitary Gland of Cattle, Proc. Soc. Exper. Biol. & Med. **29**: 648 (Feb.) 1932.

Transplantation of thyroid tissue from normal rats into refractory animals also is ineffective in raising the metabolic rate. Serum obtained from rats thus rendered refractory, when administered to other rats, effectually prevented the effect of the thyrotropic factor,[10] while normal rat serum or normal horse serum had no such effect. But rats the blood of which contained the inhibitory factor still responded to desiccated thyroid with a rise in metabolic rate.

Anderson and Collip[11] have succeeded in preparing highly potent antithyrotropic extracts of the serum of a horse injected for some time with thyrotropic factor. Similarly, a serum that inhibits the effects of the growth principle of the pituitary,[2] and another that prevents the gonadotropic activity of the hypophyseal-like fraction from the urine of pregnancy, have been obtained.[12] Evidence has also been adduced for the existence of yet other antihormones.[2]

Not only are these observations of great fundamental significance, they emphasize further the necessity for the utmost caution in the clinical use of endocrine products. Repeatedly, warnings against the indiscriminate application to therapeutics of our still fragmentary knowledge of glandular physiology have been issued by those who, like Cushing, have provided the foundation for the present exceedingly active work in this subject. Only a year ago the Council on Pharmacy and Chemistry[13] pointed out the possible dangers of the unconsidered administration of such active agents in the field of gynecology. The investigations discussed here provide emphatic substantiation of this point of view.

VITAMIN D IN BLOOD AND IN MILK

Irradiated milk and the milk from cows given feed that has been enriched in vitamin D through added viosterol, either as such or as irradiated yeast, rank peculiarly high in relative antirachitic potency when compared to other commonly used sources of this accessory food factor. This observation, naturally, has raised many questions: Granted the therapeutic excellence of these foods, is it advisable or practicable to insist that all market milk should be augmented in vitamin D potency?[1] What change occurs in the milk which renders it so much more efficacious in the treatment of rickets than an equivalent number of units of vitamin D in other forms?[2] What precautions must be taken in fitting the subject to this new form of dietotherapy?[3] And one might reasonably inquire into the workings of the physiologic mechanism whereby the lactating mammal transports and possibly transforms the vitamin D of the food into that of the milk.

A recent study by Light, Wilson and Frey[4] bears on the vitamin D content of the blood and milk of cows fed irradiated yeast. The animals under investigation were part of a herd that was being regularly fed in this way for the commercial production of "yeast milk." It was observed that after one dose of the yeast the rate of disappearance of vitamin D from the plasma was more rapid in the early hours after feeding, when the concentration was high, than later. Furthermore, as might be expected, there was an apparent dependence of level of the antirachitic factor in the milk on that in the plasma. Examined more promptly after the irradiated yeast had been fed, the plasma showed a distinct rise in content of vitamin D in from one to two hours. Taking into account the quantity fed and the amount appearing in the blood, it was calculated that "practically 100 per cent of the vitamin D fed appears in the blood." In contrast is the relatively small proportion of the ingested antirachitic factor appearing in the milk, some 2 to 3 per cent.[5]

The studies of the fate of vitamin D in the cow doubtless have a significant bearing on the behavior of this substance in man; they indicate that a large part of this food factor ingested cannot be accounted for by bio-assays of feces, milk or tissues. There seems to be no doubt that it enters into metabolism in some manner, which in turn may be influenced by its own chemical make-up or that of the associated compounds.

SPIROCHETAL JAUNDICE IN SEWER WORKERS

Spirochetal jaundice (Weil's disease) has received occasional notice in the American literature for a number of years. It seems to be one of those conditions fated to play an ever larger part in medicine and public health. To date, however, it has been of sufficient rarity, at least as far as the diagnosis is concerned in this country, to be still in the realm of case reports. During the last ten years, according to Schüffner,[1] 452 cases have occurred in Holland with forty-six deaths. Since the chief vector appears to be the rat, it would be surprising if no further cases should appear in this country.

Additional interest in the possibilities of Weil's disease is aroused by the recent report of Fairley.[2] The case noted by him was in a man of 25 who for the

10. Collip, J. B., and Anderson, Evelyn M.: The Production of Serum Inhibitory to the Thyrotropic Hormone, Lancet **1**: 76 (Jan. 13) 1934.

11. Anderson, Evelyn M., and Collip, J. B.: Preparation and Properties of an Antithyrotropic Substance, Lancet **1**: 784 (April 14) 1934.

12. Selye, Hans; Bachman, C.; Thomson, D. L., and Collip, J. B.: Further Studies on Loss of Sensitivity to Anterior Pituitary-Like Hormone of Pregnancy Urine, Proc. Soc. Exper. Biol. & Med. **31**: 1113 (June) 1934.

13. Estrogenic Substances: Theelin, Report of the Council on Pharmacy and Chemistry, J. A. M. A. **100**: 1331 (April 29) 1933.

1. Krauss, W. E.; Bethke, R. M., and Monroe, C. F.: J. Nutrition **5**: 467 (Sept.) 1932.

2. Sterols in Milk, editorial, J. A. M. A. **103**: 190 (July 21) 1934.

3. Wilson, W. R.: Prevention of Rickets by Milk Fortified with Vitamin D from Cod Liver Oil, J. A. M. A. **102**: 1824 (June 2) 1934.

4. Light, R. F.; Wilson, L. T., and Frey, C. N.: J. Nutrition **8**: 105, 1934.

5. Hess, A. F.; Light, R. F.; Frey, C. N., and Gross, Joseph: J. Biol. Chem. **97**: 369 (Aug.) 1932.

1. Schüffner, W.: Recent Work on Leptospirosis, Tr. Roy. Soc. Trop. Med. & Hyg. **28**: 7 (June 30) 1934.

2. Fairley, N. H.: Weil's Disease Among Sewer Workers in London, Brit. M. J. **2**: 10 (July 7) 1934.

greater part of two years had been unemployed but who twenty-two days before the onset of his illness had joined a gang of workmen engaged in repairing a sewer in London. From a clinical point of view his case was typical of fatal Weil's disease. It presented the usual sudden onset with rigor, extreme prostration, muscular tenderness and severe jaundice on the fifth day. Later multiple hemorrhages, herpes and renal involvement with albuminuria, oliguria and anuria occurred, terminating with death on the eleventh day. It was subsequently reported that two guinea-pigs inoculated with blood collected from the patient on the seventh day of the disease had sickened, and necropsy revealed jaundice and visceral hemorrhages, the characteristic postmortem features of Weil's disease. Typical leptospiras were demonstrated by dark field illumination in emulsion of liver pulp from one animal and in the heart blood of both. Serum collected from the patient on the tenth day of illness and sent to Professor Schüffner in Holland gave a strongly positive agglutination reaction with the typical Weil strain leptospira.

This unusual experience led Fairley to investigate the histories of a number of other sewer workers in London. In one fatal case, the history of which was somewhat similar to the first, the coroner had returned an "open verdict—toxic hepatitis—but there was no definite evidence to show how or by what means the toxic condition had arisen." In eight other sewer workers a more or less detailed history of severe illness associated with jaundice was obtained. Blood serum was collected from three individuals at varying times after their illness. The agglutination reactions, which were performed by Professor Schüffner, were strongly positive in seven of the eight cases, varying from 1 in 100 to 1 in 1,000 when living or formalized cultures of the classic "Weil" strain, Leptospira icterohaemorrhagiae, were employed.

The mode of infection was of particular interest. The series of cases reported comprised sewer laborers engaged in repairing or rebuilding old sewers. Among other duties their work consisted in chiseling away and removing the old brickwork in a section of sewer under repair, and during this process the skin of their hands was often traumatized. The inner surfaces of bricks lining the sewer are covered with a slimy deposit, and contact with sewer water was inevitable. Rats, which are recognized as the principal carriers of the leptospira of Weil's disease, are naturally numerous in many sewers. It is recognized, moreover, that leptospira can exist in slime for undertermined periods of time.[3]

In this country, up to 1933, eight cases of leptospiral jaundice had been reported. Ball [4] reported two more cases in that year, in neither of which was it possible to determine the exact source of infection, though both individuals had apparently been in close contact with rat infested buildings. At least one of the American cases was in a sewer worker.[5]

Two points are worthy of emphasis in this connection. Diagnostic keeness in considering the possible leptospiral etiology of some obscure cases of jaundice is certainly desirable. The industrial hazard inherent in occupations involving close contact with rats or their moist excreta must be considered potentially important. In view of the widespread exposure to rat infested buildings, exaggerated by the depression, it is surprising that no more extensive infection with the leptospira of Weil's disease has been reported. As Fairley pointed out, however, since jaundice develops in only about 50 per cent of cases of leptospirosis, a serologic as well as clinical investigation of those exposed, e. g., sewer workers, should be undertaken.

3. Buchanan, G.: Spirochetal Jaundice, Special Report Series 113, Medical Research Council, London, 1927.

4. Ball, H. A.: Leptospiral Jaundice, Am. J. Clin. Path. **3**: 283 (July) 1933.

5. Cushing, E. H.: Leptospirosis Icterohaemorrhagica, J. A. M. A. **89**: 1014 (Sept. 24) 1934.

Current Comment

MUTUAL ANTAGONISM OF BACTERIAL VARIANTS

The test tube incompatibility of certain bacterial species has long been known. It has been generally assumed that different strains, types or variants of the same bacterial species can be grown together in perfect symbiosis. Now test tube antagonism has been demonstrated between different phases (R and S) of the same bacterial species. About two years ago Dr. Etinger-Tulczynska [1] of the Robert Koch Institute, Berlin, began to suspect such interphasic antagonism. He found, for example, that mice simultaneously inoculated with two types of pneumococci almost invariably yielded a pure culture of but one type at necropsy. In less than 10 per cent of the cases could both types be isolated from blood cultures or from necropsy material. A similar complete suppression of the minority type or phase was afterward demonstrated in artificial mediums. This interphasic antagonism was afterward shown to be due to an unknown integrating factor,[2] conceivably a type-stabilizing or type-transforming bacterial hormone.

1. Etinger-Tulczynska, R.: Ztschr. f. Hyg. u. Infektionskr. **113**: 762 (March 19) 1932.

2. Gundel, M., and Mayer, Ursula: Zentralbl. f. Bakt. **129**: 305 (Sept. 8) 1933. Neufeld, F., and Kuhn, Helga: Ztschr. f. Hyg. u. Infektionskr. **116**: 95 (March 20) 1934.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, Central daylight saving time. The next three broadcasts will be as follows:

August 23. Infantile Paralysis, W. W. Bauer, M.D.
August 30. Your Child Enters School, Morris Fishbein, M.D.
September 6. Football Hazards, Morris Fishbein, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Another Impostor.—Using the name Louis Giraud, a man has been presenting letters of recommendation at various hospitals throughout the country in an effort to obtain financial aid or employment as a chemist. Rev. Joseph H. Schumacher, chaplain of St. Vincent's Infirmary, Little Rock, writes that his name was fraudulently used on a letter presented at Mercy Hospital, Pittsburgh, by Giraud. When the man visited St. Vincent's, authorities there were warned that the man was a fraud. Giraud claims that he was falsely sentenced to twenty years on a penal farm in Arkansas for forging signatures.

CALIFORNIA

Maternal Mortality Reduced.—There were 364 maternal deaths in California in 1933 as compared with 448 during 1932, giving respective rates of 4.8 and 5.7 per thousand births. Among white women the rate was 4.3, Mexican 6.5, Japanese 6.1, Negroes 11 and Indians 13.3. The rate was higher in rural districts than in urban centers. The state board of health pointed out that about 70 per cent of all confinements in the state take place in maternity homes and hospitals.

Personal.—Dr. Nolton N. Ashley has been appointed health officer of Oakland, succeeding Dr. Arthur Hieronymus, who has resigned after several years' service, effective June 11.——Dr. Stanley R. Parkinson, Marysville, has succeeded Dr. James H. Barr as health officer of Yuba County.——Dr. Denver D. Roos has been appointed health officer of Corona, following the retirement of Dr. William S. Davis.——Dr. Clelia D. Mosher, emeritus professor of personal hygiene, Stanford University, received the honorary degree of doctor of laws from Mills College, June 11, at its seventy-seventh annual commencement.

CONNECTICUT

Psychiatric Society Formed.—The Connecticut Society of Psychiatry was organized at a meeting at the Connecticut State Hospital, Middletown, May 10, to foster the study of nervous and mental disorders, to improve standards of care for patients, and to advocate and foster preventive psychiatry. Dr. Allen R. Diefendorf, New Haven, was elected president.

DISTRICT OF COLUMBIA

Ophthalmic Society Organized.—The Washington Ophthalmological Society was organized in May. Membership is also open to physicians in Maryland, Virginia, West Virginia and North Carolina. Officers are Drs. William Thornwall Davis, chairman; Le Roy W. Hyde, vice chairman, and James N. Greear Jr., secretary.

Society News.—Dr. Joseph G. Pasternack of the National Institute of Health was installed as president of the Washington Pathological Society, June 2; Dr. George A. Alden, pathologist, U. S. Naval Medical School, was chosen vice president, and Dr. Virgil H. Cornell, curator of the Army Medical Museum, was reelected secretary. At the opening meeting of the society this fall a symposium on lymphatic tumors will be presented.

FLORIDA

Society News.—At a meeting of the Pasco-Hernando-Citrus Counties Medical Society in Inverness, June 15, Dr. Henry C. Dozier, Ocala, gave a paper on "Cancer Problems—The Responsibility of the Laity," and Dr. Robert D. Ferguson, Ocala, one on "Aneurysm." Dr. Ralph E. Russell, Ocala, discussed glaucoma.——Drs. Charles D. Cleghorn and John W. Snyder addressed the Dade County Medical Society, August 3, Miami, on "Skin Tumors" and "Gritti-Stokes Amputation for Gangrene of the Leg," respectively.

GEORGIA

Society News.—Speakers before the Telfair County Medical Society in Lumber City, July 10, were Drs. Wade H. Born and Frank R. Mann, both of McRae, on "Afflictions of the Anus and Rectum" and "Tonsillar Infection and Its Importance to the General Practitioner," respectively.——Dr. Loren Gary Jr., Shellman, discussed typhoid before the Randolph County Medical Society in Cuthbert, July 5.——Dr. Theodore Toepel, Atlanta, read a paper on arthritis before the Walker County Medical Society at Rossville, July 6.——At a meeting of the Jackson-Barrow Counties Medical Society in Jefferson, July 2, Dr. Samuel A. Boland, Jefferson, read a paper on treatment of rheumatism in children.——The Fulton County Medical Society was addressed, August 2, by Dr. Stacy C. Howell, Atlanta, on "The Action of Epinephrine on the Normal Human Eye." Dr. Lewis M. Gaines, Atlanta, gave a clinical talk on "Heart Symptoms without Heart Disease."—Dr. William Perrin Nicholson Jr., Atlanta, addressed the Tenth District Medical Society in Washington, August 8, on "Breast Lesions."

ILLINOIS

Personal.—A public celebration was held at Cissna Park, July 15, in honor of Dr. William R. Roberts, who has practiced thirty-five years in the community.

Society News.—Dr. William J. Carter, Mattoon, discussed stomach disorders, among other speakers before the Coles-Cumberland Medical Association at Neoga, July 19.——Dr. Felix W. Sokolowski addressed the Madison County Medical Society in Alton, August 3, on increase of mental disorders and importance of mental hygiene.

Epidemic Encephalitis at Highland.—An outbreak of nine cases of epidemic encephalitis with four deaths in Highland was reported by the state board of health, August 8. The disease appears to be of the same type that prevailed in St. Louis during the summer of 1933. Twenty-five cases occurred in Highland and Madison County during last year's epidemic. All the patients except one were more than 50 years old.

Chicago

Research on Asthma and Hay Fever.—The Research and Educational Hospital of the University of Illinois College of Medicine, 1819 West Polk Street, is carrying on experiments to determine whether electrical changes in the air during storms are related to attacks of pollen asthma. Ten women were invited to participate in the research, which began August 15 and will continue until September 31.

Dr. David Made Chairman of Surgical Department.—Dr. Vernon C. David, since 1929 clinical professor of surgery, Rush Medical College, has been appointed chairman of the department, succeeding Dr. Arthur Dean Bevan, who has held the position since 1902. Dr. David graduated from Rush in 1907 and has been connected with the school since 1910. His first appointment was as assistant in surgery. Dr. Bevan will continue with his work at Presbyterian Hospital and at Rush as Nicholas Senn professor of surgery. He began his association with the school in 1887 as professor of anatomy. He is also an alumnus of Rush, having graduated in 1883.

INDIANA

Personal.—Dr. George W. Willison, Dale, has received the Ravdin medal, which is awarded annually by Dr. Marcus Ravdin, Evansville, to the member of the senior class of Indiana University School of Medicine making the highest average in the four years course for the degree of doctor of medicine. Dr. Willison graduated in medicine at the recent commencement.——Dr. Henry F. Beckman, clinical professor of obstetrics, has been made head of the department of obstetrics of Indiana University School of Medicine, Indianapolis.

The Credit Department.—Since the establishment of the Medical and Dental Business Bureau, Indianapolis, March 1, 6,602 accounts for collection have been referred by 156 physicians, and 1,251 accounts by sixty-six dentists. The bureau is now serving in delinquent collections a total of 222 physicians and dentists on 7,853 accounts. A total of $4,767.80 has been collected from March 1 to July 21. About 400 of the accounts filed for collection owe from two to eight physicians and dentists each. The bureau was established for members of the medical and dental societies of Indianapolis.

Sanitation Programs.—An appropriation of $2,000 for cleaning and repairing drainage ditches in Marion County, including the sanitation of a sewage ditch at New Bethel, where a typhoid outbreak recently occurred, was voted by the county council, July 14. Judge Schlosser of the superior court recently ordered the council to appropriate money for cleaning the New Bethel system. June 20, eleven cases of typhoid were reported in New Bethel, which has a population of about 350 (THE JOURNAL, July 21, p. 194). A sanitation program has also been initiated in Shelby County as a project of the Emergency Relief Administration.

IOWA

Society News.—Dr. Merle J. McGrane, New Hampton, was elected president of the Cedar Valley Medical Society at its meeting at Clear Lake in July, and Dr. Ray A. Fox, Charles City, secretary.——Dr. Paul J. Hanzlik, San Francisco, addressed the Linn County Medical Society, July 26, at Cedar Rapids, on "Advancement in Pharmacology and Treatment."

Annual District Meeting.—The Iowa and Illinois Central District Medical Association held its annual meeting in Davenport, July 27, with the following speakers:

Dr Harry L. Alexander, St. Louis, Allergy.
Dr. Herbert W. Rathe, Waverly, Value of Theophylline in Treatment of Arteriosclerotic Heart Disease.
Dr. Owen H. Wangensteen, Minneapolis, Diagnostic and Therapeutic Considerations in Management of Acute Abdominal Lesions.
Dr. Clifford J. Barborka, Chicago, Diet and Disease.

Dr. John C. Souders, Rock Island, Ill., was elected president and Dr. James Dunn, Davenport, secretary.

KANSAS

Reelect Board Members.—Dr. John F. Hassig, Kansas City, was reelected president of the Kansas Board of Registration and Examination at its annual meeting in Topeka, June 19, and Dr. Charles H. Ewing, Larned, was reelected secretary. Dr. Edwin C. Morgan, Clay Center, was appointed a member of the board for four years.

MARYLAND

Changes at Johns Hopkins.—Dr. Ludwig Edelstein, formerly of the University of Berlin, has been appointed associate in the history of medicine at Johns Hopkins University School of Medicine. It was also announced that Dr. Edward H. Hume, New York, will give the Noguchi lecture and Dr. Pasteur Vallery-Radot, Paris, the Thayer lecture during the coming year.

Health Survey in Montgomery County.—One thousand families in Montgomery County will be interviewed on health problems in a survey to be undertaken at once by the U. S. Public Health Service in cooperation with the local health department, it was announced, July 27. The survey is part of a general study being made in three counties of the country, Montgomery County, Forsyth, N. C., and Fairfax County, Va. Data on illness, medical, nursing or dental care during the last year will be gathered in addition to other information on general health problems. It is hoped that the study will determine what services are performed by county health departments, which persons receive these services and what effect the services appear to have on existing health problems. All information concerning individuals will be kept confidential.

MICHIGAN

Dr. Warnshuis Goes to California.—Dr. Frederick C. Warnshuis, Grand Rapids, for many years speaker of the House of Delegates of the American Medical Association and secretary of the Michigan State Medical Society, will go to California, October 1, to become secretary and director of public relations of the California State Medical Association. Dr. Warnshuis, a native of Iowa, has been secretary of the Michigan State Medical Society for about twenty-one years.

Annual Report of Children's Fund.—During the year ended April 30, 1934, a total of $452,395.11 was expended by the Children's Fund of Michigan to carry on its work in emergency relief, child health, child guidance, research and dependency. Because of the depression some programs were eliminated and others were curtailed. The greatest expenditures continued to be in the field of child health. During this fifth year of the fund's existence, about 280,000 children received some form of service. The feeding of malnourished children in the Detroit area was carried on as a supplemental program to that of the social service committee of the Detroit school system. Eight dental clinics were maintained in school buildings, with an extraction clinic at Grace Hospital for serious cases and a tenth clinic at the Boys Club of Detroit. Thirty-six counties and two urban areas were served by the all year dental program, and twenty additional counties received the benefit of the ten weeks summer program, which was given over entirely to corrective processes as heretofore. Eleven counties in the state were served by two traveling ophthalmologists, who examined children's eyes and prescribed glasses when necessary. The fund purchases glasses when parents are not able to afford them. At the beginning of the year all grants for research not done directly in the fund's laboratory were discontinued with the exception of the study of childhood tuberculosis carried on through the St. Vincent de Paul Society by Dr. John A. Johnston of Henry Ford Hospital. The fund did not reduce its appropriation to the Michigan Children's Aid Society, which is used in helping dependent children in the less prosperous sections of northern Michigan, where the population is scattered. The children taken care of under this grant are supported wholly by the fund during the whole year. Green Pastures, summer camp for Negro children at Little Pleasant Lake, Jackson County, was also operated to its full capacity by the Urban League for Negroes. Grants included one to a special committee of the Wayne County Medical Society that helps indigent persons receive medical treatment from practicing physicians.

MINNESOTA

Society News.—Dr. Charles W. Mayo, Rochester, addressed the Mower County Medical Society at Austin, recently, on abdominal surgery.——Dr. James S. Reynolds, Minneapolis, was recently elected president of the Minnesota Academy of Ophthalmology and Otolaryngology; Drs. Hendrie W. Grant, St. Paul, and Frank N. Knapp, Duluth, vice presidents, and Dr. Walter E. Camp, Minneapolis, secretary.

Bell Lectureship Established.—The Hennepin County Tuberculosis Society has established the Dr. John W. Bell Lectureship in tuberculosis in the Hennepin County Medical Society. Under this lectureship, an authority on tuberculosis will address members of the society at the December meeting, which this year will be December 3. Dr. Bell, who died in 1933, was a member of the House of Delegates of the American Medical Association from 1919 to 1923. He was emeritus professor of medicine and at one time professor of physical diagnosis and clinical medicine, University of Minnesota Medical School. Dr. Bell also served as president of the Minnesota State Medical Association, Hennepin County Medical Society and the Minnesota Academy of Medicine and was a member of the state senate from 1891 to 1895.

President Roosevelt Presents Award to Drs. William and Charles Mayo.—The President of the United States made the presentation address at a ceremony in Rochester, August 8, when the National American Legion Citation was conferred on Drs. William James and Charles Horace Mayo, "for distinguished service to our sick and disabled comrades and to humanity in general." Introductory addresses were made by Clarence L. Fischer, commander of William T. McCoy Post, through which the citation was presented; Gregory P. Gentling, chairman of the citation committee, and Michael F. Murray, St. Cloud, state commander of the Legion. Edward A. Hayes, Decatur, Ill., national commander of the Legion, made the presentation of citations to the Doctors Mayo, to which Dr. Charles H. Mayo responded. Then followed the unveiling of a bronze plaque, which the President presented. President Roosevelt paid tribute to the physicians and to modern medicine, to which he said those concerned with government and economics are under obligation in two important respects. Medicine has shown how it is possible for human beings to control and improve conditions under which they live, he declared; from medicine also have been learned lessons in ethics of human relationships—"how devotion to the public good, unselfish service, never ending consideration of human needs are in themselves conquering forces." The plaque, designed by Harold H. Crawford, Rochester architect, bears profile portraits of the recipients in bas relief modeled by Mrs. George Trenholm, daughter of Dr. Charles H. Mayo. Charles Brioschi, St. Paul, was the sculptor. It bears the inscription "Gift of the William T. McCoy post, presented by Franklin Delano Roosevelt, president of the United States, at Rochester, Minn., August 8, 1934." It was estimated that 75,000 persons were present. Before the ceremony, the President laid a wreath at the foot of a statue of Dr. William Worrell Mayo, father of the honored physicians. On the evening of August 7, a public testimonial meeting was held at Soldiers Field, attended by about 8,000 persons. Speakers at this meeting were Gov. Floyd B. Olson, St. Paul; Frank B. Kellogg, St. Paul, former Secretary of State and now judge of the Permanent Court of International Justice; Fred W. Sargent, Chicago, president of the Chicago and Northwestern Railway; Dr. Walter L. Bierring, Des Moines, Iowa, President of the American Medical Association; Dr. Morris Fishbein, Chicago, editor of THE JOURNAL; Dr. William D. Haggard, Nashville, Tenn., president of the American College of Surgeons; Gerald V. Barron, national Legion committeeman from Minnesota, and Earl Cliff, vice chairman of the national Legion rehabilitation committee. Dr. William J. Mayo responded to these tributes. At a dinner at the Kahler Hotel preceding this meeting Dr. Francis J. Savage, St. Paul, president of the Minnesota State Medical Association, welcomed more than 300 distinguished guests.

NEW JERSEY

Personal—Col. John H. McCullough, Trenton, state surgeon of the national guard, was recently awarded a distinguished service medal by order of the governor, in recognition of his forty-two years' service in the infantry and medical corps of the national guard, according to *Military Surgeon*. Dr. McCullough was also in federal service during the World War.

NEW YORK

Society News.—The Medical Society of the County of Erie has recently removed its offices from the Museum of Science to room 1810, Hotel Statler, Buffalo.——Dr. Herman E. Wangler, Syracuse, addressed the Suffolk County Medical Society, July 25, at Southold, on medical treatment of gallbladder disease.

Heart Disease in High School Students.—The cardiac subcommittee of the Medical Society of the County of Monroe under the chairmanship of Dr. Rufus B. Crain recently published results of a four year survey of heart disease among students in the high schools of Rochester. Of 425 adolescents examined, 197 were found to have organic heart disease, 62 potential disease and 110 possible disease. At the time of examination, 142 were not under medical supervision. Sixty-seven were recorded as not eligible for gymnasium or competitive athletics and 147 eligible for gymnasium only. Vocational guidance was recommended for 176. In 1931 this was found to be 38 per cent; in 1932, 32 per cent. In 1933 the figure was 30 per cent and in 1934 it was 27 per cent; in these two years seventy-five reexaminations were made, which are not included in the estimates. Eighteen physicians contributed their services in making the examinations.

New York City

Society News.—Dr. Howard Lilienthal was elected president of the New York Physicians' Art Club at the annual meeting in May, and Dr. Louis C. Schroeder secretary. The club held its annual exhibit in April at the New York Academy of Medicine (THE JOURNAL, May 19, page 1688).

Seventh Graduate Fortnight.—The seventh annual graduate fortnight of the New York Academy of Medicine will be held October 22 to November 2, on diseases of the gastro-intestinal tract. Clinics will be held each afternoon in various hospitals and there will be extensive scientific exhibits at the academy with demonstrations at regular intervals by many of the exhibitors. At evening sessions at the academy the following speakers will be presented:

Drs. Harlow Brooks, Walton Martin and Robert E. Pound, General Principles Involved in Diagnosis of Gastro-Intestinal Diseases.
Dr. Andrew C. Ivy, Chicago, Applied Physiology of the Innervation of the Gastro-Intestinal Tract.
Dr. Henry James Spencer, Constipation.
Dr. John L. Kantor, Diarrhea.
Dr. Carl Eggers, Diseases of the Esophagus.
Dr. Burrill B. Crohn, Functional and Nervous Diseases of the Stomach.
Dr. John Douglas, Diseases of the Pancreas.
Drs. Williams McKim Marriott, St. Louis; Rustin McIntosh and Charles E. Farr, Disorders of the Gastro-Intestinal Tract in Children.
Dr. Charles F. Tenney, So-Called Chronic Appendicitis.
Dr. John E. Jennings, Acute Appendicitis.
Dr. Charles Gordon Heyd, Peritonitis.
Drs. Arthur F. Chace and Eugene H. Pool, Peptic Ulcer.
Dr. Fordyce B. St. John, Carcinoma of the Stomach.
Dr. Reuben Ottenberg, Jaundice.
Drs. William W. Herrick and Allen O. Whipple, Gallbladder and Biliary Passages.
Dr. John F. Erdmann, Tumors of the Colon.
Dr. Harvey B. Stone, Baltimore, Diseases of the Anus and Rectum, Including Tumors.
Drs. Walter A. Bastedo, Thomas T. Mackie and Francis W. O'Connor, Colitis.
Dr. Arthur M. Wright, Intestinal Obstruction.
Dr. Dean Lewis, Baltimore, Diverticulitis.

Epidemiologic Study of Trichinosis.—Within the past five years, 166 cases of trichinosis have been reported to the New York City Department of Health. In all but sixteen there was a history of having eaten pork, and twenty-nine persons admitted having eaten it raw. Seven stated that they had not eaten pork and in nine cases no information was available. Women were more frequently attacked than men, a fact accounted for by the closer contact of women with the preparation of food. The majority of the cases were in persons between 20 and 35 years of age and cases were numerous in the German and Italian populations of the city. The source of the food supply was traced to the wholesalers, and it was found that in more than two thirds of the cases the food had been purchased from local butchers or eaten in local restaurants whose products had been passed by the inspectors of the U. S. Department of Agriculture. The government agencies have repeatedly called attention to the fact that inspection is not a criterion of freedom from trichinae, the report points out. In view of the impossibility of subjecting every animal slaughtered to microscopic inspection, the government limits its regulations to the pork products that are customarily eaten raw and only for those products insists on adequate cooking or refrigeration for twenty days. Dry salting, pickling and smoking, which have been shown to be sufficient to destroy trichinae, are permitted. It is believed that many cases are not recognized or are not reported. Physicians are requested, therefore, to report all suspicious cases of gastro-intestinal disease following ingestion of pork or pork products. In addition, the problem of educating persons to eat pork only when thoroughly cooked cannot be emphasized too strongly, the report concluded.

SOUTH CAROLINA

Society News.—Drs. Charles R. F. Baker and Robert B. Bultman, both of Sumter, addressed the Sumter County Medical Society, June 7, on fractures and early diagnosis of pregnancy, respectively.——Dr. Edward A. Looper, Baltimore, addressed the Columbia Medical Society, Columbia, June 11, on "Diagnosis and Treatment of Diseases of the Larynx, Trachea and Bronchi."

TENNESSEE

Health Exhibit at Fair.—A health and medical exhibit has been planned for the Mid-South Fair in Memphis, September 3-8, under the auspices of the Memphis and Shelby County Medical Society. The medical, dental, pharmaceutic and nursing departments of the University of Tennessee will have exhibits, and local physicians will prepare displays showing progress in prevention and treatment of various diseases. A special section will be devoted to food and dietetics. The Shelby County Tuberculosis Society will demonstrate its work.

Graduate Courses in Nashville.—The Nashville Postgraduate Medical Association was recently chartered as a "nonprofitmaking organization for the purpose of giving to practitioners of medicine a brief review of medical and surgical subjects at the smallest cost of time and money" and the first series of courses was held June 25-29. Twenty-three physicians from towns of middle Tennessee attended the classes and clinic conducted by Nashville physicians. Dr. Harrison H. Shoulders, Nashville, is president of the association. It is anticipated that the graduate course will be made an annual event.

Health at Memphis.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended August 4 indicate that the highest death rate (18.7) appears for Memphis and the rate for the group of cities as a whole, 9.9. The mortality rate for Memphis for the corresponding week of 1933 was 17.5 and for the group of cities, 10.6. The annual rate for eighty-six cities for the thirty-one weeks of 1934 was 11.9, as compared with 11.3 for the corresponding period of 1933. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Society News.—Physicians of Robertson, Montgomery, Cheatham, Stewart and Houston counties at a meeting at the Idaho Springs Hotel near Clarksville, July 17, organized the Black Patch Medical Society, with Dr. Maurice L. Hughes, Clarksville, as president and Drs. William S. Rude, Ridgetop, and Paul E. Wilson, Clarksville, as secretaries. Drs. John M. Lee and James C. Overall, Nashville, among others, addressed the meeting on "Feeding Infants with Summer Diarrhea" and "Acute Respiratory Diseases," respectively.——Drs. Jewell M. Dorris, Memphis, and Guthrie Y. Graves, Bowling Green, Ky., addressed the Tri-County Medical Society (Carroll, Henry and Weakley counties) at McKenzie, July 10.——Dr. Henry Hedden, Memphis, among others, addressed the Memphis and Shelby County Medical Society, Memphis, July 3, on costs of medical care.

VIRGINIA

State Board Members Reappointed.—All members of the state board of medical examiners were reappointed recently with the exception of Dr. Alex F. Robertson Jr., Staunton, who represented the tenth congressional district. As the number of districts was recently reduced to nine by legislative enactment, reappointment of Dr. Robertson was precluded. Dr. Philip W. Boyd, Winchester, is president of the board and Dr. John W. Preston, Roanoke, secretary.

WASHINGTON

Society News.—Drs. George H. Anderson and Edward S. Jennings, Spokane, addressed the Chelan County Medical Society, Wenatchee, June 7, on "Abdominal Symptoms of Cardiovascular Disease" and "Unusual Phases of Appendicitis," respectively.——Three Seattle physicians addressed the Walla Walla Valley Medical Society, Walla Walla, June 14, as follows: Drs. Edward D. Hoedemaker, on "The Psychiatrist in Future Medicine"; George W. Swift, "The New Outlook for Medicine" and Donald V. Trueblood, "Importance of Early Diagnosis of Cancer."——Dr. Charles E. Watts, Seattle, among others, addressed the Yakima County Medical Society, Yakima, June 11, on cardiac disease.

WEST VIRGINIA

Society News.—Drs. Frank S. Johns and Marvin Pierce Rucker, Richmond, Va., addressed the Central West Virginia Medical Society, July 18, at Webster Springs, on "Treatment of Acute Appendicitis" and "Rupture of Membranes as a Means of Induction of Labor," respectively.——Dr. Moritz F. Petersen, Charleston, addressed the Fayette County Medical Society, Oak Hill, July 10, on "Hypothyroidism in Infants."——Dr. Athey R. Lutz, Huntington, presented a paper on "Deformities Usually Encountered in the Crippled Child" before the Cabell County Medical Society, July 12.——At a joint meeting of the Monongalia and Preston county medical societies in Hopemont, July 6, speakers were Drs. George L. Leslie, Howell, Mich., on "Collapse Therapy in the Treatment of Pulmonary Tuberculosis," and David Salkin, Hopemont, on "Intestinal Tuberculosis."

GENERAL

Changes in Status of Licensure.—The New York State Board of Medical Examiners reports the following revocations made at a meeting of the board of regents, June 22:

Dr. Malcolm Cameron Rose, New York, license revoked following his conviction in federal court of violating the Harrison Narcotic Act; he was sentenced, February 14, to serve three years in Northeastern Penitentiary, Lewisburg, Pa.

Dr. Maurice Minton, New York, license revoked on the charge of having performed an illegal operation.

The New Mexico Board of Medical Examiners reports:

The license of Dr. Arthur H. DeLong, Gallup, was revoked, April 9, following his conviction on the charge of violating the Narcotic Act.

Study of Neoplastic Diseases.—The American Association for Study of Neoplastic Diseases will meet in Washington, D. C., at the Mayflower Hotel, September 6-8. Seven sessions will be held, with chairmen as follows:

Dr. Joseph Colt Bloodgood, Baltimore, Lantern Slide Demonstration of Microscopic Pathology.
Dr. Charles F. Geschickter, Baltimore, Microscopic Pathology.
Dr. Wright Clarkson, Petersburg, Va., Symposium on Bone Tumors.
Dr. James F. Kelly, Omaha, X-Ray Diagnosis of Neoplastic Diseases.
Dr. John Shelton Horsley, Richmond, Va., Symposium on Neoplastic Diseases of the Gastro-Intestinal Tract.
Dr. Edwin A. Merritt, Washington, D. C., Radiation Therapy in Neoplastic Diseases.
Dr. Max Cutler, Chicago, Symposium on Neoplastic Diseases of the Breast.

National Recreation Congress.—The twentieth National Recreation Congress will be held in Washington, D. C., October 1-5, sponsored by the National Recreation Association. There will be no papers. The congress will divide itself into discussion groups beginning Tuesday morning and continuing through the day and each morning thereafter. Wednesday, Thursday and Friday mornings at 11 o'clock the entire congress will come together to hear reports from these discussion groups. Wednesday and Thursday afternoons will be left free for special meetings; Friday afternoon will be devoted to special meetings. General meetings will be held each evening, with addresses by prominent speakers. Headquarters will be at the Wardman Park Hotel.

News of Epidemics.—Four new cases were reported, August 11, in the epidemic of bacillary dysentery in Jersey City, N. J. Eighty cases remained in Jersey City hospitals. Deaths of two children in Monmouth County from the infection were also reported, August 11.——Twenty-two cases of typhoid in Blackhawk County, Iowa, recently were traced to contaminated milk. All the families involved bought milk from the same dairy.——Eighty-two cases of typhoid occurred in an epidemic in Augusta, Maine, recently, all living along a single milk route. An examination of all food handlers in the city resulted in the removal of four carriers from food handling jobs; one was found to be employed on a dairy farm.——Five persons have died among twenty-five cases of Rocky Mountain spotted fever in Maryland this year, the state board of health reported August 6.

Congress of Physical Therapy.—The thirteenth annual session of the American Congress of Physical Therapy will be held at the Bellevue Stratford Hotel in Philadelphia, September 10-13, under the presidency of Dr. Albert F. Tyler, Omaha. The William Benham Snow Memorial Lecture will be given the opening day by Drs. André Halphen and J. Auclair of the Hôpital H. de Rothschild, Paris, on "Pyretotherapy by Means of Thermogenic Physical Agents." In addition to the clinical conferences of the various sections there will be symposiums on gynecology and cancer Wednesday and Thursday, respectively. Participating in the general sessions will be, among others:

Dr. Morel Kahn, chief of service, department of electro-radiology, Hôpital de la Pitié, Paris, on "Applications of Lapicque's Currents."
Dr. Joseph C. Doane, Philadelphia, Histamine Iontophoresis in the Treatment of Vasospastic Conditions.
Dr. Jacob Gershon-Cohen, Philadelphia, Roentgenologic Studies of the Colon by Means of the Double Contrast Enema.
Dr. Leroy W. Hubbard, Warm Springs, Anterior Poliomyelitis (moving picture demonstration).
Dr. Disraeli Kobak, Chicago, Radiothermy in Medicine.
Drs. Charles J. Sutro and Michael S. Burman, New York, Value of Fluorescence in Medicine.
James Houston Shrader, Ph.D., Johns Hopkins School of Hygiene and Public Health, Baltimore, The Fortification of Milk with Vitamin D.

A joint meeting of the congress and the Philadelphia County Medical Society will be held Wednesday evening, September 12, with Dr. Russell L. Cecil, New York, as the speaker, on "The Modern Medical Approach to the Problem of Arthritis," and Dr. Hugh H. Young, Baltimore, "Malignant Tumors of the Bladder and Prostate."

CANADA

Society News.—The Canadian Public Health Association held its annual meeting in Montreal, June 11-13; among speakers were Drs. Albert Grant Fleming, Montreal, on "The Relationship of Public Health to Medical Care" and Dr. Antonio Bolduc, Montreal, "Amebic Dysentery: Its Public Health Significance and Control."

Hospital News.—It was recently reported that the Grenfell orphanage and school at Cartwright, Labrador, which served as a hospital for the region and for the northern fisheries, had been burned with the loss of one life. Erected four years ago, the institution was valued at $100,000. Sir Wilfred and Lady Grenfell were at their summer home in Charlotte, Vt., when they received news of the fire.

French-Speaking Physicians Meet in Quebec.—A congress of French-speaking physicians, a combined meeting of the Association of French-Speaking Physicians of North America and the French Congress of Medicine, will be held in Quebec, August 27-31. French physicians from France, Belgium and Switzerland will attend the congress and spend several weeks traveling in Canada and the United States. Subjects to be treated in symposiums include pancreatic syndromes, hypoglycemic states and pyretotherapy. Sessions will be held at the Chateau Frontenac and practical demonstrations will be given in various hospitals. Presidents of the joint congress are Drs. Albert Paquet, Montreal, and Sergent, Paris. The general secretary is Dr. Vaillancourt, Paris.

FOREIGN

British Medical Election.—Sir Richard R. Stawell, Melbourne, Australia, was chosen president of the British Medical Association for 1935-1936 at the annual meeting at Bournemouth in July. Dr. Sydney Watson Smith, Bournemouth, was made president for the coming year. The annual meeting will be held in Melbourne next year.

Society News.—The Manchester Medical Society, Manchester, England, will celebrate its hundredth anniversary in October. A commemorative meeting will be held October 3, with an exhibit of historical interest, and a history of the society will be issued.——The ninth International Congress on Dermatology and Syphilology will be held at Budapest, Sept. 15-21, 1935, under the presidency of Prof. Ludwig Nekam, Budapest.——An International Congress of Medicine as applied to sports will be held in Vittel, Vosges, France, September 2-4.

Congress on Biologic Action of Radiation.—The first International Congress on Electro-Radio-Biology will be held at the Doges Palace, Venice, Italy, September 10-15. Senator Guglielmo Marconi and Count Giuseppe Volpi di Misurata, secretary of state, will preside at the opening session. Among Americans listed on the program are William D. Coolidge, Ph.D., and C. P. Haskins, Schenectady, N. Y.; Arthur H. Compton, Ph.D., Chicago; Otto Glasser, Ph.D., Cleveland, and Robert W. Wood, Ph.D., Baltimore. Applications of radiation to medicine and therapy will not be examined in this congress.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 21, 1934.

Eradication of Ancylostomiasis from South African Mines

Gold was discovered on the Rand in 1886 and crowds rushed there. At first all drilling was done into dry rock, an enormous amount of fine dust was raised and the miners developed silicosis in five years and on an average died from it after working ten years. About seventeen years ago a new method of drilling was introduced, in which water is automatically pumped through the drill, the mines became wet and after two years hookworm disease (ancylostomiasis) appeared. At first it was mild but after seven years it threatened the industry. As the native miners are recruited from districts where the disease is endemic, its introduction was inevitable. The ova of the worm are passed in the feces and under suitable conditions of temperature, moisture and darkness are hatched in about two days. The larvae bore through the human skin and so man is infected. The requisite conditions of temperature and moisture existed in the Rand mines for the flourishing of the larvae, and the latrines were misused or not used at all by the native miners. Feces were left on the floor, to be trodden on by later comers. The lowest levels of the mines (from 3,000 to 7,000 feet down), where the temperature is highest, became heavily infested with the larvae and the higher levels infested to less degree.

In the *Irish Journal of Medical Science,* Dr. J. H. Hodgman has described how by a simple method the infestation was overcome. In February 1927 the Transvaal Mine Medical Officers Association made a number of recommendations for prophylaxis. All East Coast natives were to take a dose of 3 cc. of carbon tetrachloride prior to their distribution in the mines and again a week later. The underground latrines were to be so constructed as to prevent pollution of the mine, and a coal-tar disinfectant was to be applied daily. Unfortunately the carbon tetrachloride treatment was not without risk, and five natives succumbed to poisoning. The prophylactic campaign was carried out energetically, but it was found that the infected soil was sterilized only to a depth of about one-fourth inch, beneath which the larvae throve. Moreover, disinfectants when so concentrated as to kill larvae were harmful to the miners' hands and boots, and the expense was enormous. It was then noticed that hookworm infestation in India was not so severe in the coastal villages as in centers farther away, and Dr. Fischer accidentally discovered that strong solution of common salt was fatal to the larvae. Salt disinfection of the mines was then carried out. Once a week the floors and walls of the latrines for at least a height of two feet, as well as the perches or seats, were scrubbed with a 20 per cent solution. A layer of coarse salt was strewn over the floor in the vicinity of the latrines. A layer an inch thick was placed at the bottom of the underground buckets when put in position in the latrines, and a similar layer when they were removed. The layer of salt about the latrines took a week to melt. Eight days after this treatment the floor, which previously swarmed with larvae, was found to be sterile. It was also found that salt solution had excellent and quick powers of penetration. Since October 1927 salt disinfection has been extensively used. All the shafts, slopes and drives of the mines are salted. The mines are now clear of hookworm ova and larvae and it is impossible for any miner to become infected.

After this success underground, attention was turned to the miners in the hospitals, suffering from ancylostomiasis. Thymol, 30 grains (2 Gm.), was given and the dose was repeated after two hours and an ounce of magnesium sulphate was administered an hour later. The thymol proved a fairly good vermifuge but the natives objected to the repeated treatments and hated being purged. Carbon tetrachloride, 3 cc., was usually curative after two treatments but had to be abandoned because of the danger. Like chloroform, it is apt to damage the liver. Oil of chenopodium has the advantage that no preliminary starvation or purge is necessary, but it is nauseating and is usually given in capsules, 1.4 cc. divided into three doses, which were taken at intervals of an hour. Complete cure resulted from four treatments and there were no fatalities. In 100 cases the maximum dose of 3 cc. was given and in seven neurotoxic symptoms (dizziness, headache, deafness and depressed action of the heart) were produced. It was then decided to experiment with a combination of the two drugs. They mix freely and the mixture does not increase the toxic effect of either. On the other hand, the results show that on the worms their effects are supplementary. Carbon tetrachloride, 2 cc., and oil of chenopodium, 1 cc., were put into one gelatin capsule and given. There is no need for starvation or purgation. One capsule is taken on an empty stomach, and liquid or semisolid food can be allowed at once. The patients leave the hospital the same evening and may resume work on the following day. This treatment has been carried out for two years in thousands of cases. Most of the patients were cured by one treatment, some by two, and a third was occasionally necessary. A lapse of ten days was allowed between the treatments. Ancylostomiasis is now rare in the mines.

Tropical Macrocytic Anemia

At the London Association of the Medical Women's Federation, Dr. Lucy Wills described her work on tropical macrocytic anemia during the last five years. In 1928 tropical macrocytic anemia was described under the name of "the pernicious anemia of pregnancy," which was a serious cause of maternal and fetal mortality in the large cities of India. The blood picture resembles that of pernicious anemia but there are the following differences from idiopathic pernicious anemia: (1) earlier age incidence and association with pregnancy; (2) absence of remissions except after delivery; (3) free gastric hydrochloric acid in normal amounts in the majority of cases; (4) absence of a raised indirect van den Bergh reaction or increase in urinary urobilin; (5) absence of nervous involvement; (6) slight differences in the blood picture—less poikilocytosis, less polychromasia and higher leukocyte counts. The cases are febrile frequently, but no evidence can be obtained of infection or toxemia. The disease responds to liver treatment, which suggests a nutritional origin. It was later found to occur in men and nonpregnant women. It is evidently a deficiency disease and its prevalence in pregnancy can be explained by the increased demands on the maternal organism. A deplorable multiple deficiency in diet was found among the hospital classes of Bombay, particularly want of vitamins A and C. Macrocytic anemia was produced in rats and monkeys on this diet. The addition of marmite to the diet proved curative. At this time Castle's work on the intrinsic and extrinsic factors of blood formation appeared. As the tropical cases apparently presented normal gastric secretion, it was inferred that it was the extrinsic factor which was deficient.

The Medical Service of the Air Force

In THE JOURNAL, June 23, p. 2124, revised conditions for the medical services of the army and navy were reported. A reduction in the medical establishment of the air force is to be brought about by abrogating at all stations other than the college and flying training schools the rule that a medical officer must stand by whenever flying is in progress. The result will be that it will be necessary to carry only one medical officer at flying stations. Arrangements will be made for a

local physician to be summoned in the absence of a medical officer. After five years' service all permanent officers will be given the opportunity of taking a course of specialist study and the promotion to squadron leader of officers who obtain a specialist qualification will be accelerated. The ages of promotion will be reduced and the proportion of officers enabled to reach higher ranks will be increased. The pay of squadron leaders will be increased by $1.25 a day. The gratuities payable to short service officers will be $2,000 on transfer to the reserve after three years' service and $5,000 after five years.

International Memorial to Florence Nightingale

The Florence Nightingale International Foundation was inaugurated in London under the chairmanship of Sir Arthur Stanley, who read to delegates of nursing societies from all over the world a telegram from the queen. She was glad to hear that the memorial would take an educational form, as this would have commended itself to Miss Nightingale, who had the training of nurses so much at heart. Telegrams of congratulation from the Japanese and Chinese Red Cross societies were read. The chairman explained that the business was to elect officers and committees of management for the foundation. The purpose of the foundation was to provide postgraduate nursing education on a permanent basis for a selected group of fully trained nurses, drawn from those in the forefront in all countries. The foundation would be governed by a grand council comprising representatives of the International Council of Nurses, the League of Red Cross Societies and the Nightingale memorial committees, formed or to be formed in each country. Eighteen such committees had already been constituted. The foundation started its work at once and took over the international courses for nurses conducted in London until last year by a committee including representatives of the International Council of Nurses and the League of Red Cross Societies. In handing over its task the committee reported that arrangements for continuing the courses during 1934 and 1935 had already been made, and twenty nurses with suitable qualifications had been nominated to participate. Officials were elected from the countries of the world. The American ones were Miss Adelaide Mary Nutting, emeritus professor in Columbia University, honorary president; Mrs. Draper, American Red Cross Society; Miss Ann Goodrich, Yale University School of Nursing, and Miss Jean Gunn, superintendent of nurses, Toronto General Hospital, vice presidents.

Shortage of Water from Prolonged Drought

Prolonged shortage of rain has caused considerable concern as to water supplies. The minister of health has issued a circular to local authorities urging them to formulate plans immediately for meeting any serious shortage in their area. Health officers should make sure of the purity of any new sources and also of existing sources where the supply is low. Where necessary the water should be chlorinated or otherwise purified. Where water for domestic purposes is conveyed in carts, tanks or other vessels, care should be taken that they are clean. If sufficient rain does not fall before September, a serious shortage may be expected and detailed plans should be prepared at once.

Sir Frederick Hopkins Honored

Sir Frederick Gowland Hopkins, who has been the leader of biochemistry for a quarter of a century and is now president of the Royal Society, has been awarded the Albert medal of the Royal Society of Arts. He has been professor of biochemistry in the University of Cambridge since 1914. He received the Nobel prize in 1929, the royal medal of the Royal Society in 1918 and the Copley medal in 1926. His most important work has been done on vitamins. Previous Albert medalists include such eminent men as Faraday, Kelvin, Joule, Helmholz, Edison, Lister, Bunsen, Crookes, Rayleigh, Marconi, J. J. Thomson, Lodge and Lord Rutherford.

PARIS

(From Our Regular Correspondent)

June 27, 1934.

A New Antistreptococcus Serum

Professor Vincent, who in 1929 announced an antistreptococcus serum, has not ceased working to perfect it and to increase its potency. He recently presented it before the Academy of Medicine in its new form, with which one is able to secure recoveries in such grave cases as septicemia and streptococcic suppurative meningitis. The bacteriologic diagnosis must be exact, for the serum has no action on infections caused by the enterococcus, Streptococcus mucosus, Streptococcus putridus or Micrococcus foetidus. In some hospitals the serum is injected prophylactically into suspected patients (fractures of the cranium, confinements and in otorhinolaryngologic cases). In the septicemias the serotherapy should be used as long as signs of infection persist. After defervescence (usually on the sixth to the ninth day), when the patient should be recovering, one injects 30 cc. and then 20 cc. for four or five days. It is useless to combine with the serum other vaccinal or chemical medication. In his statistics, Vincent has entered not only all the deaths observed in patients correctly treated but also the deaths occurring in patients who died from complications not dependent on the streptococcus, or who received an inadequate dose of serum or were treated in the last phase of the disease. Recoveries could be effected, particularly in puerperal septicemia, in patients treated on the fifteenth to the twentieth day; but recoveries are then much more infrequent than in cases treated early. The septicemias treated (all of cutaneous, buccal, nasopharyngeal, otitic, genital or pulmonary origin) numbered 136; the number of recoveries was 111 (81.62 per cent), and the number of deaths was 25 (18.38 per cent). A large proportion of the patients who recovered had serious complications: pneumonia, purulent pleurisy, suppurative arthritis, meningitis, meningomyelitis, cerebral abscess, phlegmon of the orbit, general peritonitis, hemorrhagic nephritis, and the like. In eight cases of septicemia complicated with endocarditis, recovery occurred in seven. In malignant endocarditis lenta the serum is ineffective. The number of cases of meningitis treated with a serum was eight, with seven recoveries. The interest in Vincent's research lies in the fact that, without pretending to be effective in all cases, his new serum has increased the number of types of streptococcic general infection amenable to serotherapy. The results are dependent on the promptness of treatment and on whether the doses of serum employed are adequate.

The Cancer Institute at the Faculté de Médecine

Eight years ago there was created at the Hôpital de Villejuif an anticancer center just outside the city of Paris. This soon became the most important center in France for the study of cancer, its creation having been promoted by Mr. Paul Strauss, who was then minister of public health. The director of this center as Mr. Gustave Roussy, who became later professor of pathologic anatomy and just recently dean of the Faculté de médecine de Paris. The Villejuif center has now become a school for the study of cancer. The latest development is the addition of a hospital to serve exclusively for the treatment of cancer patients. The hospital was recently opened by the president of the republic. The buildings of the hospital and the research institute erected on the grounds of the Hôpital de Villejuif occupy 15,000 square meters. The hospital is a three story building, with a hall 280 meters in length, which affords a survey of all the wards. The illumination is excellent,

and aeration is assured by filtered air from the basement. A cool or warm temperature, as may be desired, is maintained by machines, regulated by merely pressing a button. On the ground floor are the consultation rooms and the radioscopic, radiographic and radiotherapeutic rooms. There are four rooms for radiotherapeutics, under the direction of Dr. Belot, three of them being equipped with apparatus with a capacity of from 200,000 to 300,000 volts. A fourth apparatus is being constructed with a potential of 750,000 volts. The control chamber of the electric current is isolated from the treatment wards and is connected with these by a microphone for the reception of instructions from the physician and by an apparatus that registers automatically under the eyes of the physician the amount of voltage employed. The department of curietherapy, which occupies the second floor, is under the direction of Madame Laborde. The institute has 7 Gm. of radium, 2 Gm. of which is distributed in numerous tubes and needles. Five grams is enclosed in a bomb for intensive treatment. A mechanical device raises the container readily above the patient lying in bed. When not in use, the container and needles are enclosed in a large cylinder, which an elevator carries 3.5 meters underground. The radium room is lined with lead 12 mm. thick. The nursing personnel is subjected regularly to blood examinations and is changed every year. The third floor is occupied by the surgical department of Prof. Pierre Duval. The roentgenograms are illumined in a recess of the wall under the eye of the operator. The hospital contains 150 beds. There are rooms with twelve, eight and four beds, and individual rooms for patients who can afford the expense.

BERLIN

(From Our Regular Correspondent)

June 25, 1934.

The Admission of Physicians to Panel Practice

The federal ministry of labor issued new regulations concerning the admission of physicians to practice in the krankenkassen, which went into effect July 1. Any physician seeking admission to such practice must be enrolled in the federal medical register, and registration may be denied if the physician is not a German citizen in full standing. The medical registers kept in the various districts are combined in the federal medical register, which is kept by the Kassenärztliche Vereinigung of Germany and which furnishes information to the committees on admission, the ministries and the leagues of the krankenkassen; the federal register is always open to inspection on demand. One physician is admitted for every 600 members of the krankenkassen. The relation of the number of panel physicians to the number of insured members is established by the committee on admission at the beginning of a calendar quarter and is announced publicly. If in a given district the number of panel physicians exceeds 1:600, only one physician shall be admitted for every three retiring panel physicians until this proportion is reestablished. In districts in which the proportion of panel physicians to the total membership is especially high, the number of physicians newly admitted may be still further restricted or, if need be, all admissions may cease for a time. Exceptions to these rules may be made if the filling of the post of the retiring panel physician is necessary for the assurance of the medical treatment of the members previously attended by him. A panel physician is admitted to practice in one of the towns or in one of the town districts for which the physician made application. In towns in which the specialists among the panel physicians amount to more than 40 per cent of the total, only practicing physicians may be admitted to panel practice. If in a town in which no panel physician has settled the admission is needed, admissions for other towns of the same district may be refused until a physician is admitted for the town in which an emergency exists. If furthermore the admission of a physician in a rural district would seriously affect the living of a previously admitted physician, it may be ordered that within certain limits no physician shall be admitted until further notice. The purpose of these regulations is to enforce in general a definite relation between the number of physicians and the number of insured.

A requirement for admission is at least two years of preparation for panel practice in the krankenkassen. During this period the physician must serve three months as assistant or locum tenens of a panel physician with a general practice carried on chiefly in a rural district. On completion of the two years a candidate may submit for consideration his experience as an assistant in hospitals up to twenty-one months, practice in camps designated by the federal leader of the panel physicians up to twelve months, as assistant of panel physicians up to nine months, and practical medical experience in medico-scientific institutes up to six months. A recognized course of postgraduate study also receives consideration. Experience as an assistant or voluntary physician is not counted if the physician attended to his own practice at the same time. In the case of physicians gravely injured during the war or of physicians who during the struggles associated with national movements were severely injured, some leniency may be shown, although they must have had at least one year of practical medical experience.

Excluded from admission are physicians of non-Aryan origin and physicians whose spouse is of non-Aryan origin. If one grandparent of a physician is a non-Aryan, he may be rejected. In case of doubt, a special certificate of the official expert must be secured. Thus, in the future, no more non-Aryan physicians will be admitted as panel physicians. If non-Aryan physicians admitted before the enactment of this regulation make it evident that they are not always ready to support firmly the national-socialistic state, they may, following a specific condemnation by the federal leader (Dr. Wagner) of the Kassenärztliche Vereinigung, be permanently excluded.

Married women physicians will be excluded unless their participation in panel practice appears needed for the protection of the family. Physicians who as officials have a regular income of at least 400 marks ($150) a month will not ordinarily be admitted to panel practice. In the case of married physicians, 500 marks ($190) is the limit, with 50 marks ($19) added for each child in the physician's immediate family. In the matter of admissions, special preference will be shown physicians with grave war injuries, physicians who served in the war, exiled physicians and married physicians (with exact consideration of the number of children). Special training courses for newly admitted panel physicians are being organized.

These new regulations constitute the most important part of the laws pertaining to panel physicians.

Tuberculosis in Children

Dr. Ulrici, director of a large sanatorium for lung patients, stated in a recent address before the Berlin Medical Society that mortality from tuberculosis in children has declined during the past ten years. He was, however, unable to state with certainty whether the morbidity had changed for the better. If any suspicion attaches to children, the tuberculin test must be applied. In children of school age the tuberculin test is not so reliable; in fact, during the school age period the diagnosis is much more difficult because the clinical picture has fewer manifest symptoms. At this time certain slight symptoms should be heeded, even though they may seem unimportant—such as fatigue, loss of appetite, or a strange psychic behavior. The school physician can perform valuable service in the early recognition of the disease. Children in the secondary stage of the disease are usually not asthenic but pasty. With reference to the relations between infantile tuberculosis

and tuberculosis of adults, Ulrici holds the view that most cases of tuberculosis in adults are closely connected with conditions in the children—it may be a question of an activation of the primary pulmonary focus, the early dissemination focus or of the late dissemination. Ulrici does not think that in early infiltrations of adults it is a question of primary tuberculosis.

Observations on Tuberculin Sensitivity in Children

On 410 tuberculous children who in part were under observation for from nine to fifteen years, examinations on the behavior of the tuberculin sensitivity were reported by Dr. Viethen of the University Children's Clinic in Freiburg-im-Breisgau; 171 of these 410 children lived in the same environment with patients having open tuberculosis and were thus exposed to infection. During the long observation period, a reduction of the sensitivity to tuberculin was not demonstrable but rather an increase. Furthermore, no relation between sensitivity to tuberculin and the activity or form of the tuberculous processes could be ascertained. The possibility of superinfection had likewise no perceptible influence on the degree of sensitivity to tuberculin and the activity of the disease. Finally, the examinations showed that no prognostic conclusions could be based on the degree of the local reaction.

Purified Tuberculin

The constantly increasing cutaneous application of tuberculin for diagnostic purposes induced the government testing center for tuberculins to institute a series of tests on the cutaneous activity of tuberculins. Prof. E. Küster has therefore worked out an exact testing method for the cutaneous action of tuberculins through intracutaneous inoculation into tuberculous guinea-pigs, in comparison with the standard tuberculin. It was found that the cutaneous value of whole tuberculins applied to guinea-pigs is not applicable to man, since man reacts cutaneously to the various substances combined with the whole tuberculin. Küster therefore applied the Willstätter method to bring the tuberculins up to a high degree of purity. On applying the tuberculins intracutaneously and subcutaneously, it was found that in whole tuberculin two different substances, separable from each other, are present, one of which acts on the skin and the other on the tuberculous focus, the so-called *todstoff*. By means of dialysis it proved possible to remove from the whole tuberculin all but 10 per cent of the *todstoff*. In this manner a tuberculin with a predominant amount of substance acting on the skin was obtained, the cutaneous employment of which on man avoids the danger of a general and focal action. By testing this substance on tuberculous and nontuberculous children the diagnostic value, compared with other tuberculins, for skin tests was demonstrated. This purified skin tuberculin appears suitable for the recently introduced serial examinations for the centripetal combating of tuberculosis.

NETHERLANDS

(From Our Regular Correspondent)

June 19, 1934.

Physician Allowed Compensation for Infection Contracted in Line of Duty

An assistant physician of St. Joseph's Hospital in Heerlen developed measles during his service in the measles pavilion of that hospital. The Rijksverzekeringsbank refused to intervene in spite of the law pertaining to industrial accidents, the management alleging that there was no question of sudden cause or of an event occurring in a comparatively short time. The central committee on workmen's compensation reversed the decision of the Roermond committee and that of the insurance management and conceded the physician's claim to an indemnity, basing its decision on the fact that the causative agent of the disease was introduced into the organism suddenly, or within a short time, and that the infection was connected with his service. Physicians will hereafter be insured against the risks of infection to which they are exposed in the performance of their regular duties.

The First Netherlands Open-Air School

Netherlands' first open-air school was completed in July 1933. It consists of an examination room, refectory, restrooms and classrooms. It has accommodations for 100 pupils. Weak children are sent here on the recommendation of the consultation bureau for the combating of tuberculosis, in The Hague. Classroom work occupies the time from 9:10 a. m. to 12:15 p. m. After the noon meal the children rest from 1 to 2:30 and then resume their studies until 4:10 p. m. The late afternoons are devoted to physical exercise and manual training. In instruction, an endeavor is made to follow the standards of the regular primary school and at the same time to give more individual attention to the pupils.

Goiter in Children of School Colonies

Dr. Koopal's study of the goiter problem in the Netherlands was begun in 1932. He examined 1,502 boys and 1,509 girls and found 23 per cent affected with goiter, 16.5 per cent of the boys and 28.3 per cent of the girls. The percentage increases with the age, reaching the maximum at about age 12 for the boys and ages 8-12 for the girls. Dr. Koopal mentions other regions besides those studied particularly, in which thyroid patients are encountered. His conclusion is to the effect that goiter does not constitute an obstacle to the placing of children in school colonies.

The Institute of Criminology in Leyden

Prof. Dr. L. Van Italie, Mr. J. M. Van Bemmelen, Dr. E. Carp, L. Hulst, Dr. A. J. Steenhauer and Dr. D. Wiersma, who created the Institute of Criminology of Leyden, are planning to give next winter a series of lectures with demonstrations and tests. At each session two topics will be treated, and after the lectures the question will be thrown open for general discussion. Problems of poisoning and the psychologic examination of criminals will be taken up first.

Reports on Weil's Disease

Two articles on Weil's disease appeared recently in the *Nederlandsch Tijdschrift voor Geneeskunde*. In the first, Kramer reports twenty-four observations on Weil's spirochetosis without icterus and describes the most marked symptoms for the diagnosis of these incomplete types, among which one may emphasize redness of the conjunctiva and the muscular signs. He divides the cases observed into four groups. In addition to forms of general infection without localized symptoms, he cites seven cases of nephritis and four in which the disease evolved exclusively in the form of an acute meningitis. Kramer refers to the recent monograph of Troisier and Boquien, whose indications—although secured of course in an entirely independent manner—agreed with his own. The occupation of the first patient examined by Troisier in 1926 (abattoir butcher) is in line with the discovery of several cases of Weil's disease in the abattoirs of Rotterdam (infested by many rats). One point to notice in the French cases is the normal (or even markedly increased) sugar content of the cerebrospinal fluid. Kramer is inclined to associate this with the fact that the pancreas also may be involved.

In the second article, Postmus recalls that the observations made by different authors do not agree with the results of the seroreaction in former patients with Weil's disease. Nineteen cases were studied at the Division of Tropical Hygiene in the Colonial Institute of Amsterdam. The studies extended to the seventeenth year after the infection. They revealed that in

the Netherlands the agglutinins and the lysins were preserved for many years in the blood of patients who had been affected with leptospirosis. This result is in accord with that of Pettit but is different from that secured by other authors. Possibly (as in other diseases) the immune bodies disappear more rapidly from the organism in the tropical region. Furthermore, the leptospiroses of Sumatra differ from the typical leptospirosis of Weil in Europe.

ITALY

(From Our Regular Correspondent)

May 31, 1934.

The Health of the Italian Army

From the recently published annual report on the health of the Italian army for 1930, it appears that the morbidity per thousand among the noncommissioned officers and enlisted men dropped to 522, as against 546 for the previous year. The mortality was 2.7 per thousand of the average number enlisted. The average daily number of soldiers confined to their beds was twenty-two per thousand, which was an increase of two over the preceding year. The average duration of hospital care was eighteen days for persons admitted to the military hospitals, and five days for those under observation.

The highest morbidity was among the newly enlisted carabineers, who are enrolled as volunteers at the age of 18 and are subjected to intensive drill and instruction. The morbidity increased in May and June, in which the greatest number of recruits are under arms, and reached the maximum in July.

From the standpoint of occupation of soldiers before being called to the colors, the morbidity from infectious diseases was less among the agricultural groups and more among the industrial and commercial groups.

The most frequent causes of death were tuberculosis (60.88 per hundred thousand of the average enlisted force, and covering 22.6 per cent of the deaths from all causes) and diseases of the respiratory apparatus. The lowest mortality was in the engineer corps and the highest was among the *granatieri*, chiefly because of accidents. The highest mortality was in the month of August (1.02 daily for each hundred thousand effectives); the lowest was in January (0.57). The number of soldiers eliminated as a result of medicolegal examinations was 24.54 per thousand effectives.

The most frequent diseases and sicknesses were the mild states of general malaise (227.4 per thousand patients). Of the disorders of the respiratory apparatus, pleuritis constituted 11.8 and pneumonia 9.5 per thousand. Of the infectious diseases, syphilis accounted for 52.2 per thousand, mumps for 25.2, malaria for 16.3, tuberculosis for 4.5, typhoid for 2.9, and diphtheria for 0.1 per thousand.

Only two soldiers were admitted to the hospital for acute alcoholism during the whole year.

The number of surgical operations performed in the military hospitals was 5,495, with an additional 3,361 minor interventions. The large number of operations was due to the radical treatment of inguinal and scrotal hernia (1,028); the next in order were appendicectomy (320), phlebectomy (17) and mastoidotomy (130).

During the year, 1,616 patients were admitted to the military hot springs resorts.

New Senators Among the Physicians

In addition to those mentioned in a previous letter, Profs. Luigi Devoto, Giuseppe Muscatello, Giunio Salvi and Giuseppe Ovio were recently chosen as senators.

Professor Devoto is of the University of Milan, where he established and is the director of the chair of clinical aspects of occupational diseases. He has carried out important research on pellagra and ancylostomiasis, the results of his studies having been published by special journals, such as *Il lavoro* and *Le malattie del lavoro*. Another important field of action of Professor Devoto has been the problems of Italian hydrologic and climatic resorts. Many of his pupils occupy today chairs in universities.

Professor Muscatello is director of the surgical clinic in Catania. He has been rector of the Università degli studi of Catania and dean of the faculty of medicine.

Prof. Giunio Salvi is occupant of the chair in human anatomy and rector of the University of Naples. Of his many publications, the best known are those on a new method of topography of the rolandic fissure and the fissure of Sylvius. He has published treatises on anatomy and a manual of dissection.

Professor Ovio is director of the Clinica oculistica of the University of Rome, president of the Società oftalmologica italiana and of the Fondazione per gli studi oftalmologici e per la profilassi oculare.

The Surgical Society of Pavia

At a recent meeting of the Società medico chirurgica di Pavia, Zavattari spoke on the frequency of schistosomiasis of the bladder in Fezzan. Examining many samples of water and many persons in that region of Africa in 1933, the speaker found that Bullinus contortus is widely diffused in Fezzan. The persons affected by the disease ranges around 50.6 per cent of the total population, reaching the maximum in the children, almost all of whom present ova of Schistosoma haematobium in the urine.

Trabattoni reported the results of research on tubercle bacilli with the Löwenstein method on the blood and the spinal fluid of patients with disorders of the nervous system. Examining thirty-six samples of blood from patients with dementia praecox, multiple sclerosis and chorea minor, he secured constantly negative results. He also found negative eighteen samples of spinal fluid from psychopathic patients and five samples of spinal fluid from patients with pulmonary tuberculosis in an advanced state. The speaker concluded therefore that the statements of Löwenstein cannot be accepted, at least not in nervous diseases.

Monti gave the results of experiments at the Policlinico di Pavia on the contaminations of the air, fogs and snow. The fogs, so frequent in the plain of Lombardy, collect germs, dusts and extraneous gases in the air but to a varying extent, depending on the meteorological conditions. The winds, although they stir up dust and thus disseminate various germs and spores, disperse fumes, gases and fine dust and hence, on the whole, tend to purify the air.

In low-lying fogs without wind, all the impurities of the air remain near the earth; germs develop ten times more rapidly than in the presence of wind, and among these Bacillus fusiformis abounds. In addition to mineral dusts there are many coal particles, with various products of combustion, and the gases given out by industrial establishments. With sudden changes of temperature, if there is no wind, the smoke from chimneys and the industrial gases and vapors are thrown out into the lower strata of the atmosphere. If these gases and vapors attain a certain concentration, they may give rise to disasters such as were observed in December 1931 in the valley of the Meuse.

Prophylaxis of Venereal Diseases

The public health service has recently sent to the prefects regulations for the prevention of venereal diseases, considered with special reference to heredity. The provisions concern chiefly aid to syphilitic women during pregnancy and to the new-born with congenital syphilis. Obstetricians should investigate with great care to discover the possible presence of syphilitic manifestations in pregnant women, and serologic examinations should be made in all suspected cases. Pregnant syphilitic women should be admitted to a special department and not to the ordinary ward for syphilitic women.

Orphan asylums should provide special wards for syphilitic persons. The new-born should not be admitted until a serologic test for syphilis has been applied to both mother and child. The aid to syphilitic children admitted to orphan asylums should ordinarily be given within the institution, but after the nursing period is completed it may be continued in special institutions.

In the children's hospitals and the pediatric clinics, centers should be established for congenital syphilis and infantile syphilis, in which mothers will find facilities that will encourage them to take their children there.

The public health service took this opportunity to urge provincial physicians to determine the best method to collect data on cases of congenital syphilis.

BELGIUM

(From Our Regular Correspondent)

June 19, 1934.

Vaccination with Anatoxin

Ramon, Timbal and Nélis communicated recently to the Royal Academy of Medicine of Belgium their observations on 14,000 children vaccinated with anatoxin. Vaccination with anatoxin has been found to be practically harmless. Anatoxin properly prepared and controlled cannot cause the slightest specific intoxication. The reactions are transitory and never dangerous. Vaccination never has any bad effects on the later development of the vaccinated child. The injection of anatoxin is not followed by a negative phase. It does not render the vaccinated subjects more sensitive to diphtheritic infection or to any other disease. If the anatoxin possesses the requisite number of flocculation units and is injected according to prescribed rules in the doses and with the observation of the intervals recommended, it produces immunity in a high proportion of persons vaccinated, and the immunity conferred endures for a long period. Applied in two injections (1 and 2 cc., with an interval of three weeks, and with anatoxin having at least 20 antigenic units), vaccination will develop an immunity that yields a negative Schick reaction in from 99 to 100 per cent of persons vaccinated. It is the preferred method for individual and collective prophylaxis of diphtheria.

Thrombophlebitis of the Cavernous Sinus

At the annual meeting of the Groupement belge d'études oto-neuro-ophtalmologiques et neuro-chirurgicales, Dr. Moreau discussed thrombophlebitis of the cavernous sinus. The paths that infections follow are important to know. The cavernous and the contiguous sinuses form a venous crossway, which surrounds the hypophysis and constitutes from the venous point of view an equivalent of the circle of Willis.

Although every thrombosis has an infectious origin, the author holds that there are sufficient reasons to grant a certain independent existence to the two groups set up by older writers: marantic thrombosis and inflammatory thrombosis. The former is always due to a general disorder and has its seat usually in the unpaired sinuses. When it extends to the paired sinuses it does so symmetrically. Inflammatory thrombosis invades the paired sinuses and is commonly asymmetrical.

In the majority of cases, thrombosis of the cavernous sinus is a purely inflammatory thrombosis. As regards preventive treatment, when the inoculation lesion is facial, intervention should be as prompt as possible by means of wide electrocoagulation with the electric knife; and extensive coagulation, which should go considerably beyond the infected area. With an electric loop the column of coagulated tissue is removed, which leaves a pit effecting the drainage of the thrombosed veins of the adjacent area.

In cases of tonsillar, sphenoidal, auricular or maxillary origin, the fundamental indications are early and thorough treatment, whenever possible, of the original lesion. In spite of early drainage, it is sometimes difficult to check the progress of infection. From the standpoint of treatment of thrombophlebitis of the cavernous sinus, the author pointed out that the various technics proposed were all too radical to be applied to patients so gravely intoxicated.

Surgery is not always contraindicated, but careful selection of cases is needed. The time of the appearance of the cavernous sinus and the rapidity of the evolution are the principal criteria as to the attitude to be observed.

No intervention should be attempted in the cases with rapid evolution or in those that have evolved too far. With regard to the operative technic, the author sides with the views of Wells P. Eagleton. He pointed out that ligation of the internal carotid artery, which relieves the strain on the thrombosed sinus, is the first distinct advance made in the treatment of thrombophlebitis of the cavernous sinus.

Malaria in Tropical Africa

Dr. Rodhain, of the Institut royal colonial belge, recently lectured on malaria in tropical Africa, which is the most important factor opposing the settlement of Europeans in the tropics. He emphasized the great difference between the malarial regions of the temperate zone, where the malaria season lasts only a few months, and the tropical regions with endemic malaria, in which the anopheles are less numerous during the dry season but do not disappear.

The crusade against the mosquito cannot of itself break the cycle of propagation. Chemotherapy—quinine, on the one hand, and plasmochin, on the other hand—gives positive results in the carrier of parasites. But, as a product that will protect man against the sporozoites transferred from the mosquito is not available, he concluded that in the regions where malaria is endemic the curative and gametocidal action will not give permanent results unless the crusade against the mosquito is carried on effectively. Is the sterilization of the native, who constitutes the great reservoir of virus, possible? The chemotherapeutic products are expensive. The vast undertakings to eradicate malaria give variable results, depending on the peculiar topographic and climatic conditions. There is justification for expecting a chemical product that is truly prophylactic. The extension of the cultivation of cinchona trees may furnish a powerful aid.

Leprosy in the Belgian Congo

In a population of 443,700 in the region of Nepoko, Belgian Congo, 4,600 leprous subjects have been detected. The Red Cross Society assumed the task of ferreting out these cases and of rendering the necessary aid. It has concentrated 700 leprous subjects in three villages and is planning to establish further villages. It does not appear likely that these leprous colonies will be self supporting.

Marriages

WILLIAM ANDREW HORSLEY GANTT to Miss Mary Gould Richardson, both of Baltimore, June 23.

JOHN WILLIAM CAMP, Cambridge, Ohio, to Miss Emma Marie Gordon, at Somerset, June 17.

NICHOLAS PADIS, Boston, to Miss Kively Evangelides of New Brunswick, N. J., April 29.

MORGAN CUTTS, Bridgeport, Conn., to Miss Katharine B. Knox of Baltimore, June 30.

T. MAURICE AHLQUIST to Mrs. Wilbur N. Joyner, both of Spokane, Wash., June 4.

WILLIAM E. BUEHLER to Alice F. Willson, both of Chicago, July 26.

Deaths

Edward Grant Seibert ✠ Washington, D. C.; Columbian University Medical Department, Washington, 1893; counselor of the Medical Society of the District of Columbia; formerly clinical professor of laryngology, rhinology and otology at his alma mater; served during the World War; fellow of the American College of Surgeons; aged 68; died, June 30, of paratyphoid fever, diverticulitis and perforation of the urinary bladder.

George Walter Holden ✠ Denver; University of Vermont College of Medicine, Burlington, 1895; fellow of the American College of Physicians and member of the American Climatological and Clinical Association; formerly medical director of the Agnes Memorial Sanatorium; aged 67; died, July 12, of coronary thrombosis and arteriosclerosis.

Frederick William Mulligan, Petrolia, Ont., Canada; Trinity Medical College, Toronto, 1893; L.R.C.S., Edinburgh, 1894; L.R.C.P., London, and M.R.C.S., England, 1895; formerly member of the board of education; county coroner; on the staff of the Charlotte Eleanor Englehart Hospital; aged 61; died, May 14, of pneumonia.

David A. Hutchinson, Nashville, Ark.; College of Physicians and Surgeons, Baltimore, 1880; member of the Arkansas Medical Society; past president and secretary of the Howard County Medical Society; past president of the county board of health; formerly mayor of Nashville; aged 85; died, May 27, of senility.

Thomas Henry Mays, Freeland, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; member of the Medical Society of the State of Pennsylvania; member of the school board; aged 49; died suddenly, July 1, at his summer home in Ocean City, N. J., of coronary disease.

Orlando Fenton Lowry, Cambridge, Ohio; Starling Medical College, Columbus, 1889; formerly a pharmacist; at one time member of the board of education; aged 78; died, April 12, in the Wells Hospital, of partial intestinal obstruction caused by inflammation of the gallbladder.

Samuel L. Lingle, Paoli, Ind.; University of Louisville (Ky.) School of Medicine, 1891; member of the Indiana State Medical Association; served during the World War; aged 66; died, June 15, in St. Edward's Hospital, New Albany, following an operation for appendicitis.

Ralph Taylor Shipley ✠ Canton, Ohio; Western Reserve University Medical Department, Cleveland, 1910; served during the World War; fellow of the American College of Surgeons; aged 50; on the staff of the Aultman Hospital, where he died, July 7, of acute leukemia.

J. Wildy Ladouceur, Lewiston, Maine; School of Medicine and Surgery of Montreal, Que., 1910; member of the Maine Medical Association; served during the World War; on the staff of St. Mary's Hospital; aged 46; died suddenly, June 25, of heart disease.

Walter Abner Scott ✠ St. Johns, Mich.; University of Michigan Medical School, Ann Arbor, 1904; past president of the Clinton County Medical Society; on the staff of the Clinton Memorial Hospital; aged 59; died, June 9, of coronary occlusion.

William Henry Leith, Lancaster, N. H.; University of Vermont College of Medicine, Burlington, 1883; member of the New Hampshire Medical Society; on the staff of the Lancaster Hospital; aged 75; died, April 3, of pernicious anemia.

Albert S. J. Stovall ✠ Elberton, Ga.; University of Georgia Medical Department, Augusta, 1886; past president of the Elbert County Medical Society; formerly state senator; aged 72; died, June 21, in the Elberton County Hospital, of nephritis.

Charles William Hutchinson ✠ Concord, Mass.; Harvard University Medical School, Boston, 1917; on the staff of the Concord Hospital; aged 49; died, June 26, in the Baker Memorial Hospital, Boston, of subacute bacterial endocarditis.

Russell Andrew Patrick, Marshalltown, Iowa; State University of Iowa College of Medicine, Iowa City, 1932; member of the Iowa State Medical Society; aged 32; died, June 22, in the Evangelical Deaconess Hospital, of nephritis.

Robert Benjamin Ginn, Frankfort, Ky.; Kentucky School of Medicine, Louisville, 1893; member of the Kentucky State Medical Association; for eight years coroner; aged 62; died, June 28, of hypernephroma of the right kidney.

George W. Burnett, Whitesburg, Ga.; Southern Medical College, Atlanta, 1878; member of the Medical Association of Georgia; formerly member of the state legislature and county board of education; aged 80; died, June 19.

Homer Clifton Oatman Jr., San Diego, Calif.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1931; member of the California Medical Association; aged 29; died, June 16, of subacute bacterial endocarditis.

Medwin Leale ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1896; veteran of the Spanish-American War; aged 60; died, June 30, in St. Luke's Hospital, of myelogenous leukemia.

James Theodore Sedgwick, Litchfield, Conn.; University of the City of New York Medical Department, 1885; member of the Connecticut State Medical Society; aged 71; died suddenly, July 15, of angina pectoris.

Murdock Angus MacKay, Tisdale, Sask., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1911; for many years member and chairman of the school board; aged 54; died, April 1, in Victoria, B. C.

Walter Russell Sanders, Derry Village, N. H.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1884; member of the New Hampshire Medical Society; aged 71; died, June 29, of heart disease.

Alexander Holland Conrad, Perris, Calif.; University of Michigan Medical School, Ann Arbor, 1932; member of the California Medical Association; aged 33; died, May 10, of a self inflicted bullet wound.

Leander Young Ketcham, San Diego, Calif.; University of Vermont College of Medicine, Burlington, 1880; aged 83; died, May 14, of bronchopneumonia, carcinoma of the prostate and arteriosclerosis.

Andrew W. Goodwin, Oil City, Pa.; Cleveland Medical College, 1893; member of the Medical Society of the State of Pennsylvania; on the staff of the Oil City Hospital; aged 64; died, June 18.

Walter Hibbard Lewis, Pendleton, Ind.; University of Pennsylvania School of Medicine, Philadelphia, 1873; aged 85; died, May 31, of hypostatic pneumonia following fracture of the hip bone.

Wilfred Otto Louis Lellmann ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1914; aged 68; died, June 8, in the Lenox Hill Hospital, of heart disease.

Henry Lyman ✠ Canton, Mass.; Harvard University Medical School, Boston, 1912; served during the World War; aged 54; died, June 15, of thrombophlebitis and pulmonary embolism.

Roscoe E. Schindel ✠ Omaha; Baltimore Medical College, 1897; formerly professor of diseases of the stomach, John A. Creighton Medical College; aged 63; died, June 15, of angina pectoris.

Max Adolph Wechsler, Edgemere, N. Y.; University of the City of New York Medical Department, 1893; member of the Medical Society of the State of New York; aged 61; died, June 6.

Michael M. Rankin, Ridgway, Pa.; Medical College of Ohio, Cincinnati, 1876; member of the Medical Society of the State of Pennsylvania; aged 82; died, April 12, of gangrene.

Arthur David Morgan, Alberni, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1901; served with the Canadian Army during the World War; died recently.

James Joseph Rock, Ryan, Iowa; State University of Iowa College of Medicine, Iowa City, 1916; served during the World War; aged 46; died, June 16, in a hospital at Cedar Rapids.

William J. Esch, Cleveland; University of Wooster Medical Department, Cleveland, 1881; aged 73; died, June 12, of empyema of the gallbladder and congestive heart failure.

John W. Williams, Harvest, Ala.; Memphis (Tenn.) Hospital Medical College, 1895; veteran of the Spanish-American War; aged 76; died, May 12, of hypostatic pneumonia.

William Ferguson Torbitt, Bennet, Neb.; University of Maryland School of Medicine, Baltimore, 1903; also a druggist; aged 80; died, May 13, in a hospital at Lincoln.

Roy Wesley Klaus, Chicago; Hahnemann Medical College and Hospital, Chicago, 1912; aged 47; died, July 11, in St. Francis Hospital, Evanston, of acute appendicitis.

William T. McKay ✠ Long Beach, Calif.; Rush Medical College, Chicago, 1881; a fellow of the American College of Surgeons; aged 73; died, June 12, of angina pectoris.

Joseph Douglas Malcolm ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1904; aged 60; died, June 20, of carcinoma of the rectum.

St. Clair Streett, Kansas City, Mo.; University of Maryland School of Medicine, Baltimore, 1880; aged 75; died, June 27, of arteriosclerosis and cerebral hemorrhage.

Mark Hugh Hudgings, Caruthersville, Mo.; Missouri Medical College, St. Louis, 1887; member of the Missouri State Medical Association; aged 69; died, May 13.

Gordon Russell MacKay, Hagersville, Ont., Canada; University of Western Ontario Medical School, London, 1927; aged 31; died, June 4, in an automobile accident.

Florence B. MacRae ⊕ Chicago; Eclectic Medical College, Cincinnati, 1926; on the staff of the Woodlawn Hospital; aged 44; died, July 9, of carcinoma of the liver.

Samuel Kuner, Long Island City, N. Y.; University of Illinois College of Medicine, Chicago, 1926; aged 39; died, June 28, of leukemia and exophthalmic goiter.

Clarence Augustus Cobleigh, Chattanooga, Tenn.; Chattanooga Medical College, 1897; member of the Tennessee State Medical Association; aged 62; died, June 15.

George William Finley ⊕ Brazil, Ind., Medical College of Indiana, Indianapolis, 1890; aged 79; died, June 18, in the Clay County Hospital, of chronic meningitis.

Patrick Joseph William Conran, San Francisco; Cooper Medical College, San Francisco, 1894; aged 65; died, May 15, of cerebral hemorrhage and arteriosclerosis.

Chambers D. Calhoun, Elburn, Ill.; Jefferson Medical College of Philadelphia, 1884; aged 75; died, July 11, in the Community Hospital, Geneva, of heart disease.

Theodore L. Carriere ⊕ St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1895; formerly deputy coroner; aged 62; died, June 21, of heart disease.

Chester John Montgomery, Los Angeles; Marion-Sims Beaumont Medical College, St. Louis, 1903; aged 54; died, May 12, of hemiplegia and hypertension.

John Francis Harte, Athens, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1887; formerly coroner for Leeds and Greenville; died, May 14.

George Cramer Connett, Morristown, N. J.; Hahnemann Medical College and Hospital, Chicago, 1891; also a lawyer; aged 69; died, July 5, of heart disease.

Arthur Hart Remington, Los Angeles; University of Pennsylvania School of Medicine, Philadelphia, 1898; aged 57; died, April 17, of cirrhosis of the liver.

Rolland Tyson Winstead, Rocky Mount, N. C.; Meharry Medical College, Nashville, Tenn., 1923; served during the World War; aged 44; died, May 28.

William Joseph Winters, Philadelphia; Jefferson Medical College of Philadelphia, 1905; aged 53; died, June 22, of coronary thrombosis and myocarditis.

William Ethelbert Hall, Los Angeles; College of Physicians and Surgeons, Los Angeles, 1912; aged 47; was found dead, June 25, of cyanide poisoning.

William Starick Ruch, Carlisle, Pa.; Jefferson Medical College of Philadelphia, 1888; formerly county coroner; aged 71; died, June 28, of heart disease.

William A. Lockett, McEwen, Tenn.; University of Louisville (Ky.) School of Medicine, 1865; Civil War veteran; aged 96; died, June 11, of senility.

Willet H. Loughlin, Bloomingdale, Mich.; College of Physicians and Surgeons of Chicago, 1886; aged 76; died, June 21, of carcinoma of the liver.

Lawrence A. Hoffmier, Superior, Wis. (licensed in Wisconsin in 1924); aged 70; died, June 8, of Hodgkin's disease, arthritis deformans and prostatitis.

John Joseph Sheridan, New York; Fordham University School of Medicine, New York, 1912; on the staff of the Seton Hospital; aged 55; died, June 24.

Harry Wood ⊕ Batchtown, Ill.; St. Louis University School of Medicine, 1905; served during the World War; aged 55; died, July 4, of endocarditis.

Robert Hunter Robinson, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1873; aged 87; died, June 15, in a local hospital.

Charles Haight Conover, Philadelphia; Hahnemann Medical College of Philadelphia, 1879; aged 75; died, July 2, of a self-inflicted bullet wound.

Claude J. Harley, Bronson, Mich.; Chicago College of Medicine and Surgery, 1913; aged 47; died, July 11, of chronic nephritis and myocarditis.

Armstrong M. Spence, Lucknow, Ont., Canada; Trinity Medical College, Toronto, 1889; died, June 2, in the Oshawa (Ont.) General Hospital.

Louis M. Crow, Des Arc, Ark.; University of Nashville (Tenn.) Medical Department, 1907; aged 53; died, June 10, of cerebral hemorrhage.

John Henry Young Grant, Niagara Falls, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1886; aged 74; died, June 25.

Henry Ward Parker, New Bedford, Mass.; Harvard University Medical School, Boston, 1890; aged 85; died, May 24, of chronic myocarditis.

William H. Horr, Cleveland; Homeopathic Hospital College, Cleveland, 1880; aged 75; died, July 4, of an accidental overdose of morphine.

Frederick W. Belknap, Chicago; Northwestern University Medical School, Chicago, 1894; aged 66; died, July 16, of cerebral hemorrhage.

Walter C. Lambert, Wyandotte, Mich.; Detroit College of Medicine, 1886; formerly mayor; aged 70; died, June 8, of cerebral hemorrhage.

Samuel F. Love, Morgan City, Miss.; University of Tennessee Medical Department, Nashville, 1881; aged 76; died, May 16, in Oklahoma City.

William Roscoe Jacobs, Stockton, Calif.; Cooper Medical College, San Francisco, 1910; aged 46; died, May 20, of poison, self administered.

Stanley Edward Somers ⊕ East Tawas, Mich.; Detroit College of Medicine and Surgery, 1930; aged 33; was shot and killed, July 1.

Francis Leo Daly Scanlan ⊕ Syracuse, N. Y.; Syracuse University College of Medicine, 1908; aged 46; died, June 28, of acute nephritis.

George Phillips Waller Sr., Los Angeles; Jefferson Medical College of Philadelphia, 1877; aged 80; died, May 18, of acute myocarditis.

August H. Niemiller, Browns, Ill.; Medical College of Ohio, Cincinnati, 1875; aged 81; died, June 14, in the Olney (Ill.) Sanitarium.

John Huston Johnson ⊕ Glenmoore, Pa.; Jefferson Medical College of Philadelphia, 1907; aged 57; died, April 17, of angina pectoris.

Frank Wickham, Corona, N. Y.; Bellevue Hospital Medical College, New York, 1876; Civil War veteran; aged 86; died, May 18.

David Henry Worthington, Aurora, Ill.; Rush Medical College, Chicago, 1879; aged 83; died, June 2, of chronic myocarditis.

Wallace Nathaniel Price ⊕ Gardiner, Maine; Medical School of Maine, Portland, 1894; aged 63; died, June 16, of endocarditis.

Frank Leslie Riegel, Springfield, Ohio; Columbus Medical College, 1891; aged 74; died, June 28, in the Springfield City Hospital.

Philip Reide Kaiser, Tottenham, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1926; aged 32; died, June 3.

Albert Irvin Moore, Fayetteville, Ark.; University of Michigan Medical School, Ann Arbor, 1884; aged 71; died, May 9.

John Robert Dales, Dunbarton, Ont., Canada; Victoria University Medical Department, Coburg, 1885; aged 78; died, May 5.

Winfred W. Nuss, Elkland, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1892; aged 67; died, May 1.

George McDuffie Lackey, Staples, Texas; Memphis (Tenn.) Hospital Medical College, 1896; aged 66; died, June 14.

Andrew Grant, Beaverton, Ont., Canada; University of Toronto Faculty of Medicine, 1877; aged 80; died, May 23.

Nicholas M. Spranger, Detroit; Detroit College of Medicine, 1892; aged 73; died, June 26, of cerebral hemorrhage.

Jacob Glahn, Owensboro, Ky.; University of Louisville (Ky.) School of Medicine, 1885; aged 74; died, April 28.

James O. Robinson, Spokane, Wash.; Hospital College of Medicine, Louisville, Ky., 1885; aged 72; died, March 22.

Archie Cole ⊕ Pampa, Texas; St. Louis University School of Medicine, 1909; aged 50; died, June 21, of uremia.

George W. Kirk Jr., Curtice, Ohio; Toledo Medical College, 1888; aged 83; died, May 29.

John Edward Reeve, Toronto, Ont., Canada (licensed in Ontario in 1877); died, May 10.

Correspondence

"CHOLESTEROLEMIA AND THYROID DISORDER"

To the Editor:—I have read with interest your editorial of July 14 on cholesterolemia and thyroid disorder.

The reader who has not followed the evolution of the subject would doubtless conclude, from what you have written, that the discovery of the relationship between thyroid activity and the cholesterol content of the blood is a very recent one. For this reason it might be of interest to mention that Lande and I pointed out in 1922 (Studies on Blood Lipoids, *Arch. Int. Med.* **30**:563 [Nov.] 1922) and supported by extensive protocols the existence of an inverse relationship between thyroid activity and cholesterolemia. In subsequent publications (Thyroid Therapy and Thyroid Tolerance in Chronic Nephrosis, THE JOURNAL, Sept. 18, 1926, p. 913; Ueber Diabetes albuminuricus, die sogenannte chronische Nephrose, *Arch. f. Verdauungskr.* **44**:31 [Aug.] 1928) I have repeatedly discussed this subject and have utilized the principles involved as an index for thyroid therapy in nephrotic states—a form of treatment that is widely used.

Dr. Hurxthal's work from the Lahey Clinic, on which your editorial is based, constitutes a welcome confirmation and amplification of our investigations.

ALBERT A. EPSTEIN, M.D., New York.

LYMPHATICS OF THE SKIN

To the Editor:—My attention has been called to your editorial "Lymphatics of the Skin," which appeared in THE JOURNAL, May 19. In this article you say: "While this superficial lymphatic plexus has been described before by anatomists, it was supposed to represent local areas, each acting independently. With the technic mentioned, *the wide connections of these anastomosing plexuses were observed for the first time*" (italics mine). This statement, I regret to say, does not agree with recorded facts. Prof. H. Rouviere in his work "Anatomie des lymyhatiques de l'homme" states (p. 4) that it was Mascagni (Vasorum lymphaticorum corporis humani, p. 75 and pl. IV) who first established the connection between the superficial and deep lymphatics. In Rouviere's description of the lymphatics one also reads (p. 1, line 22): "Quand une réseau est tres riche, les vaisseau qui le forment peuvent être disposés sur plusieurs plans. Dans ce cas, les vaisseaux superficiel sont les plus petits et les profonds les plus gros. Lorsque cette disposition se prèsente, on dit parfois qu'il existe deux réseaux: l'un superficiel, l'autre profond, bien qu'il ne s'agisse la que d'un méme réseau" (Wherever a network is abundant, the capillaries that form it may be arranged in several layers, in which case the superficial capillaries are the smaller and the deeper of larger size. When this arrangement is encountered, we speak of two systems of networks, a superficial and a deep, although they function jointly as one network). On page 3, line 18: "Aussitôt après leur origine dans le reseau dermique, une partie des vaisseaux superficiels chemine superficiellement dans le pannicule adipeux;—les autres traversent ce pannicule et la fascia superficialis et se placent dans la couche de tissu cellulaire souscutane . . ." (Immediately after their origin in the lymph networks of the skin, a portion of the superficial lymph vessels run superficially, in the superficial fascia, while the others traverse the superficial fascia and come to lie in the subcutaneous cellular tissue . . .). And on page 3, line 22: "Les anastomoses entre vaisseaux lymphatiques voisins sont fréquentes. Elles diminuent de nombre à mesure qu'on s'éloigne du réseau d'origine.—Il existe aussi des anastomoses qui établissent, à travers la ligne médiane, une liaison entre les lymphatiques des deux moitiés du corps. Cette liaison est assurée, suivant les régions: soit par des anastomoses qui unisent entre eux les collecteurs voisins, soit à la fois par les réseaux et par des canaux anastomotiques" (Anastomoses between neighboring lymph vessels are frequent; these, however, diminish in number as the lymph vessels recede from their networks of origin. There also exist anastomoses which establish connections across the median line between both halves of the body. Such connections are assured according to the region: either by anastomoses which unite neighboring lymph collecting vessels, or by means of lymph-capillary networks and anastomotic channels at one and the same time). Finally, throughout his work, H. Rouviere shows clearly (for instance, figs. 60-63) the continuation of the superficial with the deep lymphatics.

M. J. TOBIAS, M.D., New York.

OVERDOSAGE OF SPINAL ANESTHETIC

To the Editor:—The following case is of interest to the profession because of the large dose of spinal anesthetic administered with a subsequent almost fatal outcome: A white woman, aged 40, weighing 160 pounds (72.6 Kg.), with a systolic blood pressure of 140 and a diastolic blood pressure of 80, was given a spinal anesthetic for a cholecystectomy for hydrops of the gallbladder. Novocain crystals (a brand of procaine hydrochloride) dissolved in the patient's spinal fluid were injected into the third lumbar space. While the gallbladder contents were being emptied the patient became pulseless and stopped breathing. Cardiac and respiratory action was restored by means of subdiaphragmatic cardiac massage, epinephrine by vein and artificial respiration. The operation was terminated at this point by a cholecystostomy. The postoperative course was uneventful. As I had given and seen given many similar spinal anesthesias with the same drug with no untoward reactions, I could not explain this reaction until I noticed that the glass ampule used did not contain the usual 120 mg. but contained 500 mg. This ampule was not meant for spinal use but was used by mistake.

ALEXANDER ZABIN, M.D., Malvern, L. I.

NOTE.—There seems to be no good reason for marketing 500 mg. ampules of novocain. These have not been accepted by the Council on Pharmacy and Chemistry. The largest dosage form accepted (Procaine-Abbott) is 200 mg.—ED.

PHYSICOTHERAPY—PHYSICAL MEDICINE

To the Editor:—Medical practitioners strongly resented the ultimately successful scheme of a few lay cultists, aided by politicians, to force the "physiotherapist" clause into the new (1926) medical practice act of New York State. The officials of the American Medical Association accordingly dropped the terms physiotherapy and physiotherapist, as applicable to medical graduates, properly substituting those of physical therapy and physical therapist. It is to be regretted that some ill advised medical practitioners and institutions still adhere to the objectionable nonmedical terms.

Otto Veraguth, M.D., professor of physical medicine at the University of Zurich, in his presidential address at the annual meeting (at that institution, Jan. 29, 1934) of the International Society of Medical Hydrology, spoke "In Defense of a Name" and, as reported in the *Archives of Medical Hydrology*, May, 1934, pages 241-242, said in part: "I take as my point of departure my criticism of two titles often used for physical treatment, or physical medicine; namely, physiotherapy and "nature medicine" (naturheilkunde). Both these terms are based on an unscientific mysticism . . . because the description is too ill defined. For we do not treat our patients nowa-

days only by climate, waters or baths, but by many technically differentiated forms of such natural forces. . . . No one would deny that behind all these processes the *vis medicatrix naturae* is at work as a driving force. . . . What the *medicus curans* provides to the *natura sanans* is intelligent removal of obstacles, rapid preparation of the way, provision of supplementary forces working in the same direction and a strengthening of their striking force. . . . The description physicotherapy (or the English term physical medicine) is in direct and definite contrast to the inadequate, illogical and presumptuous terms physiotherapy and nature treatment. The adjective physical refers to the most exact of the natural sciences, physics. Physical treatment is therefore, properly speaking, that kind of treatment of disease the therapeutic agents of which are to be defined by the science of physics."

A. B. HIRSH, M.D., New York.

MESENTERIC VASCULAR OCCLUSION WITH RECOVERY

To the Editor:—The article by J. R. Green and C. H. Allen on mesenteric vascular occlusion with recovery (THE JOURNAL, July 7) is concise, frank and instructive. The case report seems to me, however, after a close study, to be one of volvulus of the small intestine secondary possibly to adhesions from the previous appendectomy. The two conditions give the same pathologic end result—gangrene from occluded blood supply—but as their etiology is so vastly different, as is also their prognosis, I thought it would be no mere quibbling to call this to your attention. The authors themselves mention the importance of looking for an etiologic factor in a vascular mesenteric thrombosis, but in their pathologic description they have pointed out none. Furthermore, the age of the patient, 24, would make a primary mesenteric thrombosis extremely rare, whereas it is entirely compatible with the usual age incidence of volvulus. I happened to be interested in this case because I performed a necropsy in a similar one several months ago at the Philadelphia General Hospital. The symptoms and pathologic observations were practically the same, except that the volvulus was due to adhesions around a large uterine fibromyoma.

NATHAN RALPH, M.D., Eagleville, Pa.

[NOTE.—This suggestion was forwarded to Dr. J. R. Green, who replies:]

To the Editor:—The criticism is pertinent. We have no positive proof of the etiology in this case. Reference to the description of the gangrenous bowel that it was a straightened out piece of bowel lying parallel to the mesentery on the left side of the spinal column, with no kinking of the mesentery and no adhesions of the gangrenous bowel or any adjacent bowel or other viscera, makes it improbable that volvulus could have caused the interruption of the blood supply. The patient had no symptoms referable to the gastro-intestinal tract during the eight months interval between the appendectomy and the onset of the gangrenous bowel.

Two weeks before the onset of this disease the patient and three other persons took an automobile tour of several hundred miles. One other member of the party had acute appendicitis soon after returning home. He was operated on and a moderately acute catarrhal appendicitis was found with considerable free peritoneal fluid. Severe cramping pain followed at intervals for one month after this. He eventually recovered completely. The fact that two members of the party were attacked by a severe bowel malady is suggestive of food or bacterial poisoning with localized lesions of the bowel wall. Ulceration is known as one of the conditions leading to thrombosis of the mesenteric blood vessels. In the absence of bacteriologic confirmation we did not include this in the report of the case.

JOHN R. GREEN, M.D., Independence, Mo.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DIABETES IN YOUNG BOYS

To the Editor:—A boy, aged 13, 48 inches (122 cm.) tall, weighing 60 pounds (27 Kg.), has had diabetes mellitus for eleven years. His liver is enlarged, extending almost to the navel. He looks like a patient with congenital hypopituitarism as evidenced by the height, the facies of an old man and absence of pubic hair. The diabetes has been difficult to control with a maintenance diet and from 10 to 20 units of insulin twice daily. The nonprotein nitrogen of the blood is 50 mg. per hundred cubic centimeters. What relationship is there between the pituitary disturbance and the diabetes? Could marked benefit be expected from pituitary medication? If so, what would be the dosage and which type of preparation should be given?

T. A. TAYLOR, M.D., Lufkin, Texas.

ANSWER.—Fortunately the boy is alive, although 5 inches below height for his age and 17 pounds overweight for his height. He is only paying a temporary penalty for a lack of diet during the first years following the discovery of insulin. It must be taken for granted that he like all other similar patients will get fat before he gets tall and unless he breaks the rule his greatest acceleration in height will not occur until between the ages of 15 and 19 years.

It is unnecessary to use pituitary preparations, but he should have at least 175 Gm. of carbohydrate, 90 Gm. of protein and 100 Gm. of fat with insulin in sufficient amounts to keep him sugar free or nearly so and probably given in four doses. Whole thyroid gland, from 1 to 3 grains (0.065 Gm. to 0.2 Gm.) daily for months possibly would help. He would be a good subject for a boys' summer camp.

The high nonprotein nitrogen may not be significant, but it can be repeated and a two hour renal test performed. It would also be of interest to secure an examination of the eyes and a roentgen examination of the arteries of the legs.

Record of Diet, Insulin and Growth of a Diabetic Child Whose Growth was Stunted by the Undernutrition Treatment of the Preinsulin and Early Insulin Era

Date	Height in Inches	Weight in Pounds	Carbohydrate, Gm.	Protein, Gm.	Fat, Gm.	Calories	Units of Insulin	Age, Years
1919	42	35	32	29	25	477	0	5
1922	44¼	32	59	25	35	615	0	8
1925	48	51	46	68	108	1,428	20	12
1927	48¾	58	79	67	112	1,592	20	13
1928	51¾	68	101	73	118	1,758	21	14
1929	52¼	72	115	81	133	1,981	21	15
1930	53¾	80	129	83	135	2,063	33	16
1931	55½	88	172	90	144	2,344	51	17
1932	58¾	100	169	87	126	2,158	52	18
1933	63¾	126	169	87	126	2,158	64	19
1934	63¾	122	169	87	126	2,158	75	20

Two examples of similar cases are given for encouragement: The onset of diabetes in one of these boys occurred in August 1919, at the age of 5½ years. His weight was 35 pounds (16 Kg.) and his height 3 feet 6 inches (107 cm.). From 1919 to 1922 he was treated with undernutrition, 30 calories per kilogram, and grew 2¼ inches (5.5 cm.) but lost 3 pounds (1.4 Kg.). From 1923 to 1926 a moderate state of undernutrition was continued and he grew 3 7/10 inches (9.5 cm.) and grained 19 pounds (8.6 Kg.). From 1927 on he received a higher caloric diet with from 80 to 172 Gm. of carbohydrate, from 70 to 90 Gm. of protein and from 116 to 144 Gm. of fat. In 1934 at the age of 20 he is short but physically mature, taller than his mother and only just a trifle shorter than his father. His greatest acceleration of growth occurred between the ages of 16 and 19.

Another boy, in whom diabetes developed in 1920 at the age of 4 years, weighed 81 pounds (37 Kg.) dressed and was 55½ inches (140 cm.) in height in October 1932, when he was 16 years old. The treatment was changed and in February 1934 his weight was 97 pounds (44 Kg.) dressed and his height was 4 feet 11 inches (150 cm.). Thus in sixteen months he gained 16 pounds (7.3 Kg.) and grew 3½ inches (9 cm.), while his diet was increased from 101 Gm. of carbohydrate, 51 Gm. of protein, 74 Gm. of fat and 25 units of insulin to 160 Gm. of carbohydrate, 100 Gm. of protein, 100 Gm. of fat and 39 units of insulin. Greater acceleration of growth is expected in the next two years.

PRURITUS BALNEA

To the Editor:—Please advise the treatment of pruritus balnea. I have a case in which a man, aged 65, for half an hour following a bath has most terrible itching, which nothing has relieved. Soda and starch baths have been used without success. The skin shows no lesions whatever. Please omit name.

M.D., California.

ANSWER.—The patient's skin may be older than the rest of his organs, beginning atrophy with lessening circulation and failing production of oil rendering it hypersensitive. A careful examination for liver dysfunction, abdominal tumors, enlarged prostate and diabetes is in order, if not already made. Too frequent bathing in hot water with too much soap is a common cause of pruritus, drying the skin and sensitizing it. Baths should be tepid, of short duration and infrequent. Soap should be used only on the feet and hands and the folds of the body. Oatmeal or bran water, made by boiling the cereal in a gauze bag for five minutes, allowing the water to cool, then squeezing the bag, or using it as a wash cloth, should suffice for the rest of the body. Three cupfuls of oatmeal are sufficient for a full bath. After the bath, the skin should be dabbed partly dry and an oil or ointment applied at once. Liquid petrolatum or ointment of rose water may be used, or calamine liniment, consisting of calamine powder and zinc oxide, six parts of each, with olive oil and lime water, forty-five parts of each, may be used. One per cent of menthol or 2 per cent camphomenthol may be added, if agreeable. Phenol had best be avoided in application to the whole body.

If these measures do not afford relief, the patient must be satisfied with water baths only for the face, hands, feet and body folds, using oil on the rest of the body.

TREATMENT OF MYOPIA

To the Editor:—Is there any approved medicinal treatment for progressive myopia?

L. B. BUSHMAN, M.D., Omaha.

ANSWER.—Six or eight years ago Meyer Wiener of St. Louis proposed the use of epinephrine hydrochloride, 1:1,000 solution, instilled into the eye three times daily to arrest the progress of myopia in younger persons. The idea was on a purely empirical basis, but there have been several reports indicating that at least partial success attends the use of this drug.

More recently, Bothman has suggested that progressive myopia is due to hypothyroidism and advocated the use of thyroid extract for the purpose of arresting the progress of myopia. The reports from various clinics indicate that the theory is entirely unsound and that the myopia is entirely unaffected by the administration of thyroid extract.

There is no other medicinal treatment of myopia now in use.

MEDICAL TREATMENT OF GALLBLADDER CONDITIONS

To the Editor:—During these times of financial distress, a large number of my patients with chronic gallbladder disease are refusing operation and demanding medical treatment. Of course, surgery is not advisable in many cases. What kind of a medical regimen will make these patients more comfortable and reduce the frequency of exacerbations of the condition? Are methenamine and sodium succinate considered of value? What are their indications? Please omit name.

M.D., Illinois.

ANSWER.—Many patients suffering from gallbladder conditions do not require surgical treatment. This applies particularly to those who have no calculi and in whom cholecystographic examination reveals either a poorly concentrating gallbladder or one that concentrates fairly well but shows some delay in emptying after the fat meal.

If calculi are present, it may not make any difference what diet the patients are following, because they may feel perfectly well between attacks of colic, irrespective of what they eat. If, however, they have discomfort, the diet will be the same as for those with simple cholecystitis. The food should be nonirritating and of the kind that can pass through the pylorus readily. Therefore it should be either fairly well comminuted or thoroughly masticated. All raw vegetables and raw fruits and cooked vegetables like cabbage and celery should be avoided. Likewise spices, condiments, dressings with mustard, gravies, the "hot" sauces so frequently in use, smoked and spiced meats and fish, bran and whole wheat bread, clear bouillons and strong alcoholic beverages should be eliminated from the diet. The food need not, however, be entirely tasteless. For a while it was customary to keep the fats in the diet low. This is not necessary. Many patients are able to ingest fats with impunity because they stimulate the gallbladder to contract, and, unless there is a high grade spasm, this effect is desired. Most of the fruit juices, such as orange, grape or pineapple, are generally well tolerated. It is advisable that the patients avoid large meals. If there is much discomfort the meals should be as much as possible of equal size, preferably small in amount and supplemented by some food at 10 a. m. and about 3:30 p. m. Attention might be called to the fact that in the days before the x-rays were in common use for diagnosis many patients with gallbladder disease, wrongly diagnosed as having peptic ulcer, fared well on a milk and cream diet. This is an example of what repeated small meals will effect. Tincture of belladonna in 1 cc. doses before or after meals is frequently of value and rhubarb and soda mixture, 7.5 cc. after meals, will relieve postprandial distress in most cases. It is not necessary at this time to prescribe any ordered diets, because the observance of the precautions mentioned will suffice. There are no particular indications for the use of the drugs mentioned in the question.

HYPERSECRETION OF SEBACEOUS GLANDS

To the Editor:—Can you outline a course of treatment for a young man, a college student, who complains of a hypersecretion of the sebaceous glands of the nose and forehead? Astringents and ultraviolet radiation have but a temporary corrective effect. This condition is quite embarrassing to him as it is very noticeable. Please omit name.

M.D., Pennsylvania.

ANSWER.—Hypersecretion of the sebaceous glands is a more or less normal condition during the age of adolescence. The majority of local applications have only a temporary effect. In selected cases the cautious use of x-rays, one-eighth skin unit, unfiltered, once a week, may be of considerable service. The skin should be inspected carefully every week for evidence of dryness or wrinkling, and as soon as improvement sets in the treatment should be discontinued. From eight to twelve exposures should constitute a maximum, as the sebaceous glands vary in their susceptibility to x-rays. In lieu of x-rays the frequent use of soap and water should be insisted on and at night a half strength lotio alba may be applied. The following formula has recently been suggested:

Solution of sulphurated lime (N. F.) filtered	30 cc.
Saturated (1½:1) solution of zinc sulphate in rose water (filtered)	20 cc.
Glycerin	5 cc.

The diet should be low in fats and carbohydrates.

VARICELLA PUSTULOSA

To the Editor:—An infant, aged 10 months, has been sick about two weeks. Illness began with chickenpox following contact with children who had the condition in a home where the infant was staying. Following the attack of chickenpox, a cold and pneumonia developed. A greasy cloth containing turpentine and lard was applied over the chest, following which application the ulcers developed. The places where the eruption first appeared developed into ulcers all over the chest and abdomen; also some developed on the back and in the groin. The ulcers are rounded, are very deep, and exude a mucopurulent substance with a very offensive odor. The enitre scalp is a solid mass of small ulcers, over which had been spread an ointment, the composition of which I do not know. There are a number of tiny ulcers and spots where the original eruption began. I first examined the child, April 6, 1934, at about 11:30 p. m. The pulse was 162, respiration 54 and temperature in the axilla 103 F. The lungs and bronchial tubes on auscultation showed moist râles, and a percussion area of dulness over the bronchial tubes and lungs. The child was well nourished up to the attack, well developed and with no lack of bony development. The parietal and occipital foramens are closed. The symptoms mentioned together with ulcers covering the head, chest, abdomen and back were the principal ones. My diagnosis was bronchial pneumonia. The condition that is puzzling is the ulcers. The mother's and father's blood Wassermann and Kahn reactions are negative. Tests are negative for tularemia and undulant fever. Evidently the ulcers are not caused by the application to the chest, as they are over the head and back. Any information or opinion will be appreciated.

W. F. BODDIE, M.D., Forsyth, Ga.

ANSWER.—In the literature one will find cases recorded in which most of the chickenpox eruptions become furuncles or solitary abscesses. This condition is spoken of as varicella pustulosa. These multiple purulent lesions occur mostly in poorly nourished children or in those whose resistance has been lowered by previous illness, or sometimes in patients in whom the skin has been irritated. One author cites a case in which varicella pustulosa occurred after an irritating mustard bath. Urine and feces may irritate the eruptions, which occur in the gluteal and inguinal regions and transform the varicella eruptions into solitary abscesses. Cases of general pustulation often suggest smallpox, particularly when the condition occurs in adults. Varicella pustulosa must be differentiated from the gangrenous type of the disease, which closely resembles it. In the gangrenous type the ulceration takes place not only beneath the scab but also peripherally, with the formation of a grayish or black slough. The lesions may become confluent and form ulcers of considerable size. Rolleston points out that in the

worst cases the disease involves the whole thickness of the skin and even the muscle. In some of the gangrenous cases it is reported that virulent diphtheria bacilli have been found in the lesions, although the administration of antitoxin did not avert a fatal issue.

In cases in which the varicella lesions undergo suppuration, numerous complications may occur. The most severe is a general septic infection, usually with high fever and associated with a severe and fatal course; or bronchopneumonia may occur, with a similar result.

The treatment of varicella pustulosa should consist of aseptic care of the individual lesions, and frequent cleansing with boric acid solutions or some mild antiseptic, or the patient may be immersed in a warm bath. The addition of potassium permanganate to the bath water has been recommended. The child should be bathed in such a solution once or twice daily and should be allowed to remain in the bath ten or fifteen minutes, or at least as long as he remains comfortable in it.

On account of the exhausting and debilitating effects of this diffuse suppurative process, every attention should be given to the nourishment and general hygiene of the child and to such supporting measures as may be indicated.

DOWELL TEST OF PREGNANCY

To the Editor:—In an abstract of an article written by Donald M. Dowell in the *Journal of the Missouri State Medical Association* (July 1933, p. 275), there was mentioned a new test for pregnancy. This test consisted of the intradermal injection of anterior pituitary extract. Is this test accurate? If so, can any anterior pituitary extract be used? Please omit name.

M.D., Pennsylvania.

ANSWER.—Dowell attempted to detect pregnancy by injecting an "extract of anterior pituitary gland" intradermally into the flexor surface of the arm of pregnant women, but no reactions were observed. However, when he injected a few minims intradermally into the flexor surface of the arms of nonpregnant women he obtained a marked degree of erythema about the wheal at the injected site. Dowell believes that this may be a new phase of allergy. He reasons that possibly a patient who is elaborating a principle identical with that in the extract employed may have developed a tolerance for this particular substance. A patient who is not doing this would show a reaction when this substance is injected intradermally. It is not clear from Dowell's report whether the test substance is actually an extract of the hypophysis itself or whether, as appears more likely, it consists of the "anterior pituitary-like" gonadotropic factor from the urine of pregnancy. No data are given as to how soon after injection the erythema may be expected to occur or how early in pregnancy the reaction fails to appear. Recent work by Collip and his associates indicates that it is possible to develop in animals an "antihormone" against the hypophyseal-like gonadotropic factor of the urine of pregnant women.

Dowell does not give any statistics but simply says: "This test has been accurate in the author's hands and in others. It is simple, safe and quite inexpensive."

It is to be hoped that Dowell will state his method more accurately so that others will be enabled to try out the test to see whether it is dependable.

IODIDES IN SYPHILIS

To the Editor:—Quoting from your reply of January 5 as to the treatment of Wassermann-fast syphilis, "The iodides should not be omitted." What is considered a course of iodides in syphilis? I am giving lipoiodine (Ciba) for arteriosclerosis, one tablet daily. How long should I continue it? Could I use the latter product in Wassermann-fast syphilis?

J. H. BOYD, M.D., Trenton, Mich.

ANSWER.—An iodide does not exert antiseptic action against Spirochaeta pallida or increase specific cellular resistance; it is merely an adjunct to treatment chiefly for the purpose of assisting in the resolution of granulomatous tissue. One therefore can hardly speak of a definite course of iodides. They are generally given in doses of from 1 to several grams three times daily until the desired effect has been obtained, as evidenced by the relief of symptoms, such as pains, and then continued in smaller dosage for months or even years with the hope that this may prevent the formation of granulomas. No form of iodide has any definite influence on the Wassermann reaction itself. Its use in Wassermann-fast syphilis is merely desirable for the reasons stated. In the treatment of arteriosclerosis, the use as well as the value of iodide is entirely a matter of opinion and no rule can be formulated regarding the length of the course.

STAMMERING

To the Editor:—A boy, aged 9 years, whose birth was normal at full term and who has always been well and healthy except for measles, chickenpox and whooping cough, is a little mentally slow but not to an abnormal degree. He is normal in his reactions. He attends a private school, where he is in the fourth grade. His work is up to the average and his intelligence quotient is normal. His father is of somewhat nervous temperament and was afflicted with stammering as a young man and still has some impediment in his speech at times. All other history is negative. The boy was a little slow in beginning to talk and even at the present time retains to a certain extent baby talk. He stammers intermittently; that is, there has always been a slight defect, though at considerable intervals it almost entirely disappears and then for no reason reappears. At present he is in one of these occurrences and has a great deal of difficulty in speaking l and r. This is not so much a repetition of the letter as it is a difficulty in getting it out and a tendency to repeat the whole word. Of course, this condition is much worse when he is excited or angry. He does not seem to show any evidence of the so-called nervous disposition, he eats well, he sleeps well and he has all the desires and activities of a normal boy. He has been circumcized. I will appreciate any advice you can give me as to the best method of procedure as to the correction of this type of trouble. Please omit name.

M.D., Wisconsin.

ANSWER.—Three or four things can be done to cure this case:

1. The parents of the child should see a neurologist trained to specialize in speech disorders.

2. Some of the many books on the treatment of stammering should be consulted.

3. The child should be placed in a good speech class in the public schools.

4. A case of stammering needs constant attention. Treatment has to be changed according to the way the patient responds. These ways vary from case to case and cannot be foretold. The best method is one that builds up concentration and after that the control areas of speech.

ANEMIA OF PREGNANCY

To the Editor:—I have a patient who is about two and a half months pregnant. She complains of excessive gastric secretion, which comes up into her mouth as a thick, slimy mucus. This is annoying in the extreme, because she either vomits or regurgitates nearly all her food or oral medicine, which is diluted with this material. Urinary examination is negative for albumin, casts, sugar, indican and acetone. The specific gravity of the urine is 1.028. No ammonia or urea nitrogen tests have been made. The systolic blood pressure is 120; diastolic, 90. The Wassermann reaction is negative. Blood smears show juveniles 3, segmented forms 4, eosinophils 5, large lymphocytes 7, small lymphocytes 41 per cent. The red cells are normal in size and shape, and there is no pathologic condition of the white cells other than with the eosinophils. There is a slight achromia. The red blood cell count is 2,500,000. I take it that she is suffering from the chlorotic anemia of pregnancy. Am I correct in this presumption? Since the patient cannot tolerate medicine on her stomach, what is the most effective method of administering iron? By injection? What products do you recommend in this respect? Is liver extract concentrate of any value in this case? Will this condition spontaneously cease after the three months "reflex period" is over and her stomach condition clears up enough for oral administering of iron then, or is it necessary to get the red cells to normal before this condition will cease? If the condition seriously interferes with the patient's nutrition after the three months, would you consider terminating pregnancy?

M. A. THOMAS, M.D., Alto, Ga.

ANSWER.—There are essentially two types of anemia, the secondary or hypochromic form and the pernicious or hyperchromic form. In the latter the blood changes are characterized by diminution in the red count, a high color index, variation in shape and size of the red cells, often regeneration signs, polychromasic red cells and basophilic stippling, moderate leukopenia with a relative increase in the lymphocytes, and a diminished number of blood platelets. Gastric anacidity is the rule. In chlorotic and secondary anemia there is a low color index but the cells are essentially normal. About half of the women who have a secondary anemia during pregnancy have a pronounced hypochlorhydria, which returns to normal after delivery. In most instances there is a progressive increase in the anemia during pregnancy. According to Strauss and Castle (*Am. J. M. Sc.* **185**:539 [April] 1933) the hypochromic anemia of pregnancy is due either to a direct dietary insufficiency or to a deficiency conditioned by gastric anacidity, hypo-acidity or associated defects in the presence of the fetal demand for blood-building material. This type of anemia may be completely relieved either during or after gestation by the administration of iron in large dises. R. D. Mussey (*Journal-Lancet* **52**:643 [Nov. 1] 1932) is convinced that the use of ferric citrate or ferric ammonium citrate together with a balanced diet high in vitamins and the addition of vitamin D in the form of concentrated viosterol is of distinct value in treating the secondary

anemia of pregnancy. There is rarely any need of interrupting the gestation except in the cases of pernicious anemia. In practically all cases of secondary anemia, in which the red blood cell count and the hemoglobin decrease markedly, single or repeated blood transfusions are nearly always curative and will avoid the necessity of terminating pregnancy. Liver extract is not as helpful in the cases of secondary anemia as in the cases of pernicious anemia. In the case cited the gastric distress will most likely soon abate, so that iron preparations and a proper diet can be administered to the patient. If not, a blood transfusion should be given, especially if the red blood cells decrease in number.

The patient should be advised to be outdoors in the fresh air and sunlight (if available) as much as possible. The diet should contain abundant animal food, beef, mutton and chicken, and the meals should be small and often repeated. When iron is prescribed, the inorganic is as useful as the organic form. Among the inorganic forms are the tincture of ferric chloride, the reduced iron in tablet or capsule form, the pills of ferrous carbonate and saccharated ferric oxide. Preparations of iron that may be administered hypodermically are iron cacodylate, iron arsenite, and iron citrate. In many cases arsenic is of great help. This may be administered by mouth in the form of solution of potassium arsenite or intramuscularly as sodium cacodylate.

SYPHILIS IN PREGNANCY

To the Editor:—An untreated, secondary syphilis is discovered in a primipara during the first two months of pregnancy. Is a therapeutic abortion justifiable from the medical standpoint? If a therapeutic abortion is not done, what are the chances of the child contracting syphilis, assuming that the mother has the best attainable treatment during pregnancy? Please omit name.

M.D., Illinois.

ANSWER.—In view of satisfactory results achieved with modern treatment, therapeutic abortion need not be considered in cases of acute secondary syphilis of the mother in early pregnancy. Treatment should begin as early in pregnancy as possible, must be energetic and systematic, and should be continued until term. The chances of the fetus contracting syphilis in spite of thorough and persistent treatment are few, but careful observation of the infant and periodic serologic tests are advised.

For a comprehensive description of syphilis in relation to pregnancy, the correspondent is referred to Gellhorn's chapter on "Syphilis in Women" in the second volume of Curtis's Obstetrics and Gynecology (Philadelphia, W. B. Saunders Company, 1933).

FILTRATE TREATMENT OF TRICHOMONAS VAGINALIS

To the Editor:—Please let me have some information concerning the filtrate treatment of trichomonas vaginalis as referred to in an article by W. A. Thomas and E. R. McCarthy in THE JOURNAL, March 10, page 766. Please omit name.

M.D., Virginia.

ANSWER.—Trichomonas is practically always found in association with a streptococcus in cases in which symptoms are severe. On disappearance of the streptococcus, Trichomonas either disappears or ceases to cause symptoms. The streptococcus is isolated from the vaginal material, usually on brain broth, and then transplanted to blood agar plates, and flasks of dextrose broth are inoculated from these. Theoretically this broth should be filtered through a fairly fine Berkefeld filter after forty-eight hours, reinoculated, and this process repeated until no further growth takes place, that is, until the culture medium is "exhausted"—not from utilization of the content, but because of the production of a toxin or antivirus.

Results about as good are obtained by allowing the broth to stand, with occasional shaking, until it clears, that is, until the upper portion becomes perfectly clear and the sediment has settled to the bottom. No further reinoculation will produce growth. This is filtered through a Berkefeld filter and is sterile. The chief difficulty in clinical use is to prevent contamination with yeast and the like. It is well to divide the filtrate into small flasks, perhaps 50 cc. in each, which is enough for individual treatments. The filtrates are preferably autogenous, though good results are reported with pooled or foreign preparations.

In treatment, the vagina is thoroughly cleansed, particular care being taken to remove mucus from the folds, and packs or tampons saturated with filtrate are inserted, to remain from eight to sixteen hours. Relief may be almost immediate. Failure may be attributed to impure culture, since B. coli rapidly outgrows the streptococcus and suppresses its specific growth product, or to failure to obtain the particular streptococcus. However, results are not perfect, and poor results are sometimes seen when the greatest care has been taken in preparation of the filtrate. Treatment may be repeated daily or twice weekly, up to a total of twelve or fifteen times if necessary. Besredka, in his monograph Specific Immunity by Wet Dressings, explains in detail the theoretical mechanism of filtrates.

TECHNIC OF UREA CLEARANCE TEST

To the Editor:—Is the urea clearance test the same as described on page 328, volume 2, of Tice's Practice of Medicine? "The patient is given 30 grams urea dissolved in 4 to 6 ounces of water, and the urine examined for urea by any of the reliable quantitative methods." Please omit name.

M.D., Ohio.

ANSWER.—The technic of the blood urea clearance test is the following: The test is preferably performed during the morning hours. The previous meal should be a moderate one without tea or coffee. The patient is given a glass of water at the beginning of the test and remains quiet while the urine is collected for two periods of one hour each, and the volume of each specimen is measured. Blood for a blood urea determination is drawn a few minutes before the end of the first hour period. The following determinations are made:

U = urea concentration in urine (milligrams of urea nitrogen per hundred cubic centimeters).
V = urine volume (cubic centimeters per minute).
B = urea concentration in blood (milligrams of urea nitrogen per hundred cubic centimeters).
Cm = volume of blood freed from urea per minute, being for a normal adult of average size about 75 cc. of blood per minute.

The calculation is: $Cm = \frac{U\,V}{B}$

When the urine volume is less than 2 cc. per minute, the volume of blood averages about 54 cc. of blood per minute.

Then: $Cm = \frac{U\sqrt{V}}{B}$

Results are expressed in terms of cubic centimeters of blood cleared of urea per minute or in terms of percentage of average normal clearance.

This test is one of the most sensitive methods for determining renal insufficiency. For complete details consult "Urine and Urinalysis" by Gershenfeld, Philadelphia, Lea & Febiger, 1933, pages 237 to 240.

Urea is given by mouth in urea concentration tests, not in the clearance tests. In the urea concentration test the amount of urea in the blood or urine or both is afterward determined. For these tests see the work of Bowen in the *American Journal of the Medical Sciences* (**174**:769 [Dec.] 1927).

FRAUDULENT FEVERS

To the Editor:—Frequently I have to determine the question of active or inactive pulmonary tuberculosis. Occasionally a patient will have a low grade fever of 99.2 or up to 99.6 and even 100, in whom all the other signs, physical and x-ray, indicate an inactive or arrested state. Usually on certification of the temperature by the nurse the temperature will prove to be normal. However, once in a while I find one in whom even certification does not show a normal temperature. Perhaps, then, if the temperature is taken at irregular intervals the result will be a normal reading. Naturally, the suspicion is that the claimant is some way or other producing a fraudulent temperature. I am unable to detect the means that this fraudulent fever is produced. Therefore I am writing to inquire what the various methods are that malingerers might use to bring about these false readings.

M.D., Arizona.

ANSWER.—Perhaps the most common method used to produce fraudulent temperature readings is taking cold or hot water by mouth. In sanatoriums there is the occasional patient who desires to be discharged but whose temperature is sufficiently elevated to cause the medical director to refuse to recommend any exercise. If the nurses take temperature readings and such patients know about the time the readings are to be recorded, they either go to the washroom or have a glass of cold water brought by another patient. They not only drink some of this but also retain some in the mouth until just before the thermometer is introduced. Other patients who desire to have a false elevated temperature recorded use hot water. Holding the thermometer on a hot water bottle has been used by some malingerers to produce false temperature readings. Rectal temperature readings will usually overcome the possibility of such malingering. There are drugs, such as cocaine, that will produce elevation of temperature, but the dosage required is so large that other symptoms which the drugs produce would be easily

detected. Good evidence has accrued to show that the red cell sedimentation test and the differential neutrophil count are delicate indicators of the activity of a tuberculous process. These examinations are especially valuable in the group of questionable cases.

WELDER'S CONJUNCTIVITIS

To the Editor:—In my industrial work I have had several cases of welder's conjunctivitis to deal with in men using acetylene and electric torches. The color of the glasses used in this welding has included brown, light amber, blue-green, olive-green and blue. What I should like to know is whether there is any color of the lens best suited to protect the eyes in acetylene and electric welding. Besides the density and opacity of the lens, does the color have any particular significance in this work?

A. J. HERTZOG, M.D., New Orleans.

ANSWER.—In procuring protection of the eyes of welders it is necessary to utilize types of glass that serve as barriers to ultraviolet, infra-red and luminous light rays. Glass may be procured with little or no color which absorbs a high percentage of ultraviolet and infra-red rays. Such glass is ordinarily unsuited for welding because of excessive amounts of luminous rays that may be transmitted. Color is therefore desirable for the lowering of the visible light transmitted, but in addition color itself contributes to the barring of the ultraviolet and infra-red rays. At the present time various shades of olive green are accepted as representing the best color for welding work. Dark calobar glass is of such color and chemical construction as to transmit 35 per cent of the luminous rays but to bar 92 per cent of the infra-red and 100 per cent of the ultraviolet rays. Possible variations in color density meet every requirement of the several forms of welding work.

SERUM IN UNDULANT FEVER

To the Editor:—I should like to ask your opinion concerning Dr. O'Neil's immune serum for use in undulant fever cases. This was mentioned in an article on the subject by Beattie and Rice (THE JOURNAL, May 19, p. 1670). I would appreciate information as to where it may be obtained, how best it is employed, and whether it would be worth trying in a mild case of nine months' duration in which only symptomatic treatment has been given. I do not have access to the *Ohio State Medical Journal,* to which the footnote referred. Please omit name.

M.D., Sperryville, Va.

ANSWER.—The antiabortus serum developed by A. E. O'Neil may be obtained without charge for clinical trial by addressing him at the Department of Bacteriology, Cincinnati General Hospital, Cincinnati. The best results have been obtained by administering a total of 60 cc. of the goat antiserum in three consecutive daily doses of 20 cc. each, intravenously. Experience thus far has shown that but few patients receive much benefit from serum therapy after the fifth month of illness. It is doubtful whether serum would induce any appreciable improvement in a patient who has been ill for nine months, even if the infection is mild. The optimal time for serum therapy is before the end of the fourth month of illness.

MUSCLE CRAMPS DURING SLEEP

To the Editor:—Please inform me as to what may be the probable causes of tonic spasms in one or more toes occurring only during sleep in an otherwise apparently healthy young adult woman. The patient is subject to cramps in her feet while swimming in cold water. She also grinds her teeth during sleep. Please omit name.

M.D., New York.

ANSWER.—Muscle cramps such as are described by the correspondent are common and ordinarily do not indicate disease of the neuromuscular or vascular systems. Hunter (*Internat. Clin.* **4**:109-110 [Dec.] 1932) gives an excellent description. "Half awake in the morning, one lazily stretches out and is suddenly seized in one calf with a very painful cramp which lasts about a minute, during which the tendo achillis is powerfully contracted drawing the fore part of the foot downward." The mechanism of these cramps has been presented by Marx (*California & West. Med.* **38**:96-97 [Feb.] 1933): "Muscle cramps are usually brought on by sudden, exaggerated or wrongly directed impulses when a muscle action does not meet the anticipated amount of resistance or is not checked by the controlling antagonistic muscles, as is normally the case. After producing a maximum contraction the superfluous amount of muscle energy liberated by the disproportionate impulse is converted into a muscular spasm."

Muscle cramps occurring during sleep appear to arise in the same manner as do those which follow stretching except that the primary muscle contraction is an involuntary or sleep movement in the former instance and voluntary in the latter instance. In swimming, the inhibiting effect of the cold on the peripheral circulation contributes to the disposition to cramps, probably by interference with the normal metabolism of muscle.

The treatment during the episode is the forced manual extension of the muscle involved by the cramp. If, for example, the muscles of the calf are involved, the foot should be forcibly dorsiflexed. Prevention of the episodes is usually simple: avoidance of unopposed muscular contraction as during stretching and of swimming in cold water by those having a predisposition to cramps. Individuals who suffer during the sleeping hours should be fitted with a special shoe or boot to prevent involuntary muscle contraction. If the aforementioned plan of treatment is unsuccessful, the administration of some of the acid forming salts, as ammonium nitrate, at bedtime may be helpful. The assumption is that the salt prevents the tendency to alkalosis, to which the neuromuscular mechanism is unduly sensitive.

DYSMENORRHEA

To the Editor:—Can you send me advice as to how to treat a case of severe dysmenorrhea? The patient has been suffering since puberty, going to bed the first day of each period because of agonizing, cramp-like pain. The pain is usually confined to the first few hours before the flow is established. Medication required has always been strong, nothing giving relief except narcotics, which have been used sparingly to avoid habit formation. When the flow does start, she states that there are always many clots, and pain subsides. Examination, confirmed by an eminent gynecologist, reveals no abnormality. About two years ago another physician performed a dilation and curettement, but the symptoms were unchanged. The patient is now 26; she has been married seven years and has no children. No contraceptive methods were ever used. The sex act is apparently normal. The spermatozoa of the husband are of normal motility, even several hours after ejaculation. I do not know the cause of the sterility. The patient's general health is fine and her past history negative. The menses are regular (from twenty-eight to thirty days) and last four or five days, and the number of napkins used is normal. There are often flushes and breast pains preceding the periods, but these are not severely discomforting. While the patient has no other complaints, I believe that she has a slight tendency to hyperthyroidism, and there is a mild pituitary type of girdle obesity. This was not noticed by previous physicians and was dismissed by the gynecologist as inconsequential, so I may be exaggerating. Could a glandular derangement account for all the disturbances? Could such severe pain be due to endocrines? What causes the clots each month? Could it be abortions? My problem consists of the dysmenorrhea, sterility, mild endocrine disturbance of the thyroid and possibly pituitary. I am most anxious for your advice as to treatment. Please omit name.

M.D., New York.

ANSWER.—Dysmenorrhea is one of the most baffling problems with which physicians have to deal in gynecology. Based on physiologic investigations by Reynolds, Emil Novak (*Am. J. Obst. & Gynec.* **24**:319 [Sept.] 1932) comes to the conclusion that the immediate cause of dysmenorrhea is an exaggerated contractibility of the uterus manifested by pain if the pain threshold is lowered or if there is an actual imbalance between the two hormones that appear to regulate this. These two hormones are the follicular factor, the normal stimulant of uterine excitability, and progestin, the normal inhibitor. Hence in cases of dysmenorrhea it is advisable to administer biologic uterine antispasmodics and the one recommended by Novak is the luteinizing principle obtained from the urine of pregnant women. This substance, by stimulating the production of progestin, tends to inhibit the rhythmic contractility of the uterine musculature. In some cases atropine sulphate administered for twenty-four hours before the flow of blood begins is helpful. Of course, rest, hot applications and analgesics should also be prescribed during the attack of pain. In extreme cases, and only when everything else has been tried, it may be advisable to perform the operation known as pelvic sympathectomy, described by Greenhill and Schmitz (THE JOURNAL, July 1, 1933, p. 26).

The clots in this case do not indicate abortions although, to be absolutely certain, the tissue passed should be carefully studied and any pieces that look like ovular products should be subjected to microscopic examination. The clots in this case are almost certainly brought about by coagulation of the blood, due most likely to a deficiency in the ferments that normally prevent clotting of blood in the uterine cavity.

Sterility is another problem that frequently baffles gynecologists, especially when the examination of both husband and wife fails to reveal any abnormalities. Since there is a question of hyperthyroidism, it is well to have a basal metabolism test made. Empirically, small doses of thyroid may be given because occasionally it yields good results. No mention is made of a Rubin tubal patency test or of a Huhner test. These should be made. Pregnancy not infrequently follows the performance of a Rubin test.

APPARATUS FOR DETERMINATION OF BASAL METABOLISM

To the Editor:—I am interested in purchasing a basal metabolism machine and should like to know whether you consider a machine with the motor blower forced circulation of oxygen more desirable than a machine with the natural circulation of oxygen. Any information you can give me on this subject will be greatly appreciated.

M.D., Fla.

ANSWER.—The Benedict type of metabolism apparatus (closed circuit) originally required some means of impelling the air through a series of absorbers and their numerous connections. The apparatus of this type as now constructed and in general use lends itself admirably to the adaptation of valves and the discard of any mechanical air impelling device. The use of valves together with a properly balanced spirometer bell, in a properly conditioned apparatus, allows easy and normal breathing and insures basal results.

The positive or negative pressure maintained throughout the circuit invites leaks, especially in the region of the mouth and the nose.

The use of the impeller rather tends to encourage neglect in the proper care of the apparatus by promoting a false feeling of security in the mind of the operator, while it is of doubtful assistance to the respiration of the subject. In fact, too fine, too much or impacted soda lime, too much resistance due to too long tubings, an improperly balanced spirometer bell and kinks or obstructions by accumulation of moisture may all be responsible for a partial or even a complete obstruction somewhere in the ventilation circuit. All this may take place during the test without any immediate apparent sign of trouble, though the motor keeps humming along as usual while the spirometer bell is rising and falling without interference and air continues to be available through the mouthpiece. In the absence of the valves, the air in the entire system can move in one direction or the other even with a complete obstruction, in which case the subject is merely rebreathing part or all of his expired air.

GAG REFLEX IN TONSILLECTOMY

To the Editor:—Can you tell me the best way to control the gag reflex in doing tonsillectomies? I have used weak solutions of cocaine or butyn to paint the pillars, palate and uvula, with fair results. A dentist said he had heard of some tablet which the patient swallowed to control the gagging. Please omit name.

M.D., Minnesota.

ANSWER.—Tablets containing a small amount of orthoform or ethylaminobenzoate placed on and allowed to dissolve on the base of the tongue will at times lessen the pharyngeal reflex. If the patient is instructed to gargle with ice cold water several times a day for several days prior to the operation, and if in the operating room pieces of ice are held on the posterior third of the tongue and allowed to melt, the reflex also will be considerably diminished. With many individuals, if these procedures have been carried out, and the patient instructed to breathe very deeply with the mouth wide open, and with special emphasis on the deep inspirations, the gagging will usually be greatly lessened. Preoperative medication with from 0.2 to 0.4 Gm. of one of the barbituric acid derivatives is of considerable value.

While it is true that the pharyngeal reflex varies in activity within a rather wide normal range, the psychologic attitude of the patient and the proper instructions of the surgeon will usually lessen the excessive excitability of some pharynxes sufficiently to enable tonsillectomy to be performed with comfort under local anesthesia.

IRON IN ANEMIA

To the Editor:—In the Year Book of General Medicine, 1933, Drs. Minot and Castle's editorial note on page 364 is "A simple 50 per cent aqueous solution of iron ammonium citrate judiciously used in oral doses of from 2 to 6 grams daily. . . ." Could you please express the thought which Drs. Minot and Castle wish to convey with the "judicious" use of iron? 1. What are the contraindications to the use of iron therapy? 2. Is there any harmful effect of the preparation on the teeth? 3. What is the dose for children, from 2 to 4 years old, of this preparation? 4. How well do both adults and children tolerate these large doses of iron ammonium citrate? Please omit name.

M.D., New York.

ANSWER.—Undoubtedly the thought which Drs. Minot and Castle wish to convey by the use of the word "judicious" is that iron and ammonium citrate in 50 per cent aqueous solution should be used first for patients who may be expected to benefit from it and, secondly, administered in such a manner as not to cause undesirable symptoms.

1. There are no contraindications to the use of oral iron therapy except in patients who will not be benefited, and in patients with irritative lesions of the intestinal tract when distinct discomfort ensues on careful trial.

2. Iron and ammonium citrate has little, if any, harmful effect on the teeth.

3. The dose of iron and ammonium citrate for children from 2 to 4 years of age is in the vicinity of 1 to 2 Gm. daily.

4. Adults and children usually tolerate well these appropriate doses of iron and ammonium citrate, provided the medicine is administered at first in small doses and the maximum dosage attained in a period of from three to four days.

The administration of the material after meals is also desirable, in order to avoid gastric irritation. The most common undesirable symptoms are discomfort referable to the intestine or diarrhea, which can be obviated in most cases by the precautions just described. Rarely, individuals are found who cannot tolerate large doses of iron and ammonium citrate because of diarrhea. In such patients it is worth while to try other preparations of iron. The dosage should be chosen to yield a similar content of atomic iron.

On the other hand, in many patients little effect is obtained by using small doses of iron, in contrast to the beneficial effects of the so-called large dosage now commonly employed.

POSTMORTEM INJECTION OF LYMPHATICS

To the Editor:—I am anxious to obtain some data on the method of injecting the lymphatics of the terminal ileum and cecum post mortem. Any information or reference to the subject will be appreciated. Please omit name and address.

M.D., New Jersey.

ANSWER.—The best method for injection post mortem of the lymphatics of the cecum and ileum is still that of Gerota (*Anatomischer Anzeiger* **12**:216, 1896):

Select if possible a young cadaver (fetus or infant) with the cecum empty. Note from textbooks the position of the lymph plexuses spread out like mats of ivy vines in three layers: (1) subserous, (2) submucous, (3) mucous. Inject with glass cannulas drawn out in a flame to fine tubular points, from 1 to 1.5 cm. long. Use a 10 cc. syringe. Insert the glass needle along the plane of the plexus of lymph capillaries, thus cutting through some of the capillaries. Then withdraw the needle a little so as to allow the fluid to run into the open ends of the cut capillaries. Inject very slowly, with but little pressure. The whole apparatus must be absolutely clean.

For injection fluid use: prussian blue (oil color in tubes, obtainable at art shops), 2 parts; pure turpentine, 3 parts. Rub up thoroughly in a porcelain mortar. Add sulphuric ether, 15 parts, and triturate in a mortar till the consistency is uniform. Filter through a double layer of fine linen. Preserve in a glass stoppered bottle.

This suspension works much better when fresh, so it is advised to make up only a little for immediate use.

BONE GRAFT AFTER INJURY TO ULNA

To the Editor:—A white youth, aged 18, American, supposedly fractured both bones of the right forearm three years ago at the junction of the lower and upper two thirds. One and one-half years following the accident he first noticed some weakness of his right hand while milking cows. The weakness has gradually increased and is quite noticeable at the present time. Examination reveals a definite shortening of the ulna—about three-fourths inch—with increased mobility of the hand to that side. The bones are straight. The roentgenogram reveals a definite shortening of the ulna—atrophy of the distal end with no evidence of infection. Will you please outline the treatment of this case for me? If a bone graft is indicated, when should it be done? Please omit name.

M.D., Wyoming.

ANSWER.—The treatment that holds out the greatest promise is removal of the atrophied distal end of the ulna and substitution of an autogenous graft of bone. Since the ulna is small, one difficulty confronting the surgeon is to find a satisfactory method of uniting a graft with the ulna. A number of methods have been used by different men: chiseling one end of the graft to a point and inserting the pointed end into the medullary cavity; overlapping the end of the ulna with the graft and surrounding the overlapped ends with a layer of periosteum obtained at the same time that the graft is obtained; and leaving a "cuff" of periosteum attached to that end of the graft which is to be placed next to the ulna, laying the graft end to end with the freshened distal surface of the ulna, and suturing the periosteal cuff to the periosteum of the ulna. Although metal wire, screws and metal plates have been utilized to fix the graft to the living bone, these methods are gradually being discarded, and some one of the methods described, which does not involve the implantation of a foreign substance or material, is greatly to be preferred.

INTERSTITIAL EMPHYSEMA AFTER FRACTURE OF RIB

To the Editor:—Will you please describe the physics or mechanism of interstitial emphysema following rib fracture—this to settle a seemingly never to end argument at our hospital staff meeting. An old man, after a crushing injury of the right side of the thorax, in which several ribs were fractured, developed emphysema, which became general over the whole body. He died in four days of pneumonia of the left lung. What we want to know is: How does the air get from the small (in this case) hole in the visceral pleura through the fairly large hole in the thoracic wall? There was no pneumothorax evident in a roentgenogram taken eighteen hours after the injury, when the emphysema had become very extensive.

HUGH WILKINSON, M.D., Kansas City, Kan.

ANSWER.—The air constituting an emphysema of the chest wall, in the absence of an opening wound through it, comes from the lung. If the pleurae are adherent, as in the case of an old pleuritis, and the lung is injured from a broken rib, the air passes directly from the lung into the tissue of the chest wall. If the lung is not adherent in the region of the injury and there is a sufficient distance around it so that the lung can collapse somewhat, the air will leak into the pleural space and may pass into the soft tissue of the chest wall when intrapleural pressure is increased during coughing or straining. Several hundred cubic centimeters of air in the pleural cavity may not be discernible in a roentgenogram. This is often observed following the first injection of air in therapeutic pneumothorax.

NECROSIS OF DISTAL PHALANX OF THUMB

To the Editor:—I have an unusual case, necrosis of the distal phalanx of the thumb, in a young woman, the only factor as a possible cause that I can figure out being that she has been working, rather extensively for the past year, using phosphoric acid. I performed an amputation. There was no bleeding and the bone was denuded and necrosed. All the information I can get on the subject is that phosphoric acid does not have any of the attributes of phosphorus. I would be pleased to have you advise me if you have any information on the subject.

C. L. BEST, M.D., Freeport, Ill.

ANSWER.—It is impossible to explain the necrosis mentioned on the basis of the facts given. If phosphoric acid was taken into the body it would be promptly changed into a neutral phosphate by becoming combined with the alkalis normally present in the blood serum.

The query does not say anything about the condition of the soft parts surrounding the bone. Death of the distal phalanx of the thumb can result from acute, fulminating infection, vascular disease, Raynaud's disease, nerve injury followed by trauma of the soft parts, perhaps unrecognized because of the loss of sensation, and a number of other conditions.

BAROMETRIC PRESSURE IN METABOLISM EXPERIMENTS

To the Editor:—Kindly let me have a statement as to the exact significance of barometric pressures in metabolism experiments, particularly rate determinations. Kindly omit name. M.D., Maryland.

ANSWER.—According to Boyle's law, the volume of a given mass of gas kept at constant temperature is inversely proportional to the pressure on the gas. Since the methods of determining the metabolic rate depend on the measurement of the volume of oxygen consumed by the patient, it is obvious that, if the patient was to consume exactly the same amount or weight of oxygen on two different days, the volume of this amount of oxygen would vary with the atmospheric (barometric) pressures on those days. In order to avoid this variation, all volumes are corrected to standard pressure (760 mm. of mercury) as well as temperature (0 C.).

BACTERIOPHAGE IN PELVIC SEPSIS

To the Editor:—Kindly inform me at your earliest convenience regarding the proper treatment of staphylococcic septicemia, proved by repeated blood cultures, probably arising from a septic phlebitis of the broad ligament from puerperal sepsis. I would appreciate your opinion regarding the merits of treatment by bacteriophage intravenously. What value does treatment have by transfusions from a donor immunized with vaccine injections prepared from this specific staphylococcus? If available, kindly give the prognosis and the percentage of cures as reported in these cases. W. BAIRD STUART, M.D., Carlisle, Pa.

ANSWER.—Despite enthusiastic reports, the evidence thus far accumulated does not warrant optimism over the value of the bacteriophage or serum treatment of staphylococcic septicemia of pelvic origin. Blood transfusions are of much value in most of these cases, even if there is not a profound anemia. Immunization of the donor would be of doubtful value.

Reliable data on the prognosis in such cases are not available; the outlook is usually serious, but these infections vary enormously in severity.

Pelvic examinations should be avoided, unless required to rule out the possibility of a pointing abscess.

The patient should be allowed to change her position as often as she desires, but she should not be allowed to get out of bed, and movements should be made slowly and cautiously. Avoidance of abdominal distention and limitation of enemas are important factors in the treatment.

FROZEN PELVIS

To the Editor:—Paul de Kruif has done it again, with "Young Doctor Heat" in the April *Ladies' Home Journal*. Page 88 thereof discourses on "That dreadful condition called frozen pelvis." Please tell me just what and why is a frozen pelvis. I can't find it in Graves, Crossen, Williams, De Lee or my dictionaries. Sometimes a pelvis is seen whose southern regions are a bit frigid, but just how much more do they have to be cooled off before they're frozen? Please omit name.

M.D., Missouri.

ANSWER.—"Frozen pelvis" is a coined phrase for the condition in which a solid mass of induration fills the true pelvis. Some describe this hardened pelvis as one apparently filled with plaster of paris. No pelvic organ can be defined by palpation with the exception of the cervix of the uterus, which is firmly fixed.

This condition with ordinary treatment of rest, and similar measures, usually hospitalizes the patient for a period of four or five months. With heat, as administered by the Elliott method, the most desperate cases show rapid improvement. The indurated mass becomes rapidly softened and absorbed. The uterus becomes freely movable and the fallopian tubes and ovaries are easily defined. This result is usually obtained in from three and a half to six weeks.

GLAND TUBERCULOSIS

To the Editor:—I have a patient with a chronic draining cervical sinus. She is 18 years of age. Three years ago she developed swollen cervical glands. About two years ago they were incised and since that time have been constantly draining. She refuses surgical treatment. Will you please inform me as to the best way to handle this case medically? Please omit name and address. M.D., Texas.

ANSWER.—The most probable cause is tuberculosis of the glands. All the specific chronic infections or granulomas should be considered in the differential diagnosis. A number of tests, smears, cultures and perhaps the tuberculin test should be performed in an effort to establish the diagnosis.

Tuberculosis of the lymph glands frequently responds to roentgen treatments under competent hands.

General treatment is most important. It should consist of rest, fresh air, nourishing food, cod liver oil, medication as indicated and exposure of the entire body to the sun or a sun lamp.

The prognosis for healing is good.

CONVULSIONS IN CATS

To the Editor:—What is the probable etiology and therapy for the so-called running fits in cats? Please omit name and address.

M.D., Ohio.

ANSWER.—So-called running fits in cats are not recognized as such in veterinary literature. It is true that convulsions in cats, particularly young cats, are common. The paroxysm is usually sudden and the cat becomes greatly excited, the hair on the back and tail is fluffed, and the animal may run about swiftly and cry loudly. If in a room it may climb up the drapery or hide under the furniture. The excitement is continuous until the convulsion subsides.

The cause of such convulsions is the result of improper diet, intestinal parasites or ear mites.

The therapy should be directed toward the removal of the cause. To do this a veterinarian should be consulted.

TONSILLECTOMY IN ASTHMA

To the Editor:—Is there any undue risk in doing a tonsillectomy in a girl, aged 13, who has and is frequently having attacks of asthma? She is a quite nervous child, so I would prefer to use a general anesthetic. With the exception of this general asthmatic condition and tonsil disturbance she is quite normal. R. J. STEIN, M.D., Pierz, Minn.

ANSWER.—As long as the operation is not performed at the time an asthmatic attack is present, no undue risk is involved. It is often advisable to give the patient a mild sedative before the operation.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 4. Sec., Dr. W. W. Council, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written (Group B candidates).* The examination will be held in various centers throughout the country, Oct. 1. *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Chicago, Sept. 8. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Sept. 8 and San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

IDAHO: Boise, Oct. 2. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 2-3. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MONTANA: Helena, Oct. 2. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examinations in Parts I and II will be held at centers in the United States where there are five or more candidates, Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Omaha, Oct. 2-3. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, Sept. 13-14. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW YORK: Albany, Buffalo, Syracuse and New York, Sept. 24-27. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, Room 315 Education Bldg., Albany.

OKLAHOMA: Oklahoma City, Sept. 11-12. Sec., Dr. J. M. Byrum, Mammoth Building, Shawnee.

PUERTO RICO: San Juan, Sept. 4. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

WISCONSIN: *Medical. Reciprocity.* Green Bay, Sept. 11. Sec., Dr. Robert E. Flynn, 401 Main St., La Crosse. *Basic Science.* Madison, Sept. 22. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 1. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

California Reciprocity and Endorsement Report

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports 13 physicians licensed by reciprocity and 4 physicians licensed by endorsement from March 29 to June 7, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine		(1928)	Dist. Colum., (1929) Virginia
College of Physicians and Surgeons of Chicago		(1906)	Illinois
Rush Medical College		(1905), (1927), (1931)	Illinois
Indiana University School of Medicine		(1930)	Indiana
Harvard University Medical School		(1931)	New York
Detroit College of Medicine		(1911)	Michigan
Detroit College of Medicine and Surgery		(1928)	Michigan
Washington University School of Medicine		(1932)	Missouri
Western Reserve University School of Medicine		(1931)	Ohio
University of Vermont College of Medicine		(1924)	Connecticut

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Rush Medical College		(1932)	N. B. M. Ex.
Washington University School of Medicine		(1927)	N. B. M. Ex.
Starling Medical College		(1894)	U. S. Army
University of Tennessee College of Medicine		(1929)	U.S.P.H.S.

New Mexico Endorsement Report

Dr. P. G. Cornish Jr., secretary, New Mexico Board of Medical Examiners, reports 11 physicians licensed by endorsement at the meeting held in Santa Fe, April 9, 1934. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Physicians and Surgeons, Arkansas		(1908)	Arkansas
University of Colorado School of Medicine		(1932)	Colorado
Georgetown University School of Medicine		(1930)	R. Island
Chicago Medical School		(1930)	Illinois
Rush Medical College		(1933, 2)	Illinois
Harvard University Medical School		(1919)	Mass.
University of Pennsylvania School of Medicine		(1930)	Illinois
University of Tennessee College of Medicine		(1927)	N. B. M. Ex.
Manitoba Medical College		(1912)	Manitoba
University of Toronto Faculty of Medicine		(1928)	Michigan

Illinois April Examination

Mr. Eugene R. Schwartz, superintendent of registration, Department of Registration and Education, reports the written and practical examination held in Chicago, April 10-12, 1934. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Forty-three candidates were examined, 41 of whom passed and 2 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Chicago Medical School		(1932)	82
Loyola University School of Medicine		(1933)	76
Northwestern University Medical School		(1933) (1934) 79, 80, 80,* 81, 81, 82, 82, 82,* 83, 84, 85	82,
Rush Medical College		(1932) (1934) 78,* 79, 79, 80,* 81, 81, 81, 81,* 82,* 84, 84, 85, 86, 88	83,
School of Medicine of the Division of the Biological Sciences		(1932) 86,* (1933)	82,* 86
University of Illinois College of Medicine		(1933) (1934) 83	80,
Cornell University Medical College		(1924)	75
Jefferson Medical College of Philadelphia		(1931)	86

School	FAILED	Year Grad.
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1924)
Universitatea Regele Ferdinand I-iu din Cluj Facultatea de Medicină şi Farmacie		(1927)

* License has not been issued.

Kentucky Reciprocity and Endorsement Report

Dr. A. T. McCormack, secretary, State Board of Health, reports 15 physicians licensed by reciprocity and 1 physician licensed by endorsement from Jan. 31 to June 29, 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1931)	Arkansas
Chicago College of Medicine and Surgery		(1917)	W. Virginia
Indiana University School of Medicine		(1927)	Indiana
University of Louisville School of Medicine		(1931)	Mississippi
College of Physicians and Surgeons of Baltimore		(1903)	W. Virginia
University of Michigan Medical School		(1930)	Michigan
Ohio State University College of Medicine		(1928)	Ohio
University of Tennessee College of Medicine		(1931) (1932), (1933, 2)	Tennessee
Vanderbilt University School of Medicine		(1929)	N. Carolina, (1933) Tennessee
Medical College of Virginia		(1929)	Virginia
University of Virginia Department of Medicine		(1929)	Virginia

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Columbia Univ. College of Phys. and Surgs.		(1931)	N. B. M. Ex.

Minnesota April Report

Dr. E. J. Engberg, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, April 17-19, 1934. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Thirty-nine candidates were examined, all of whom passed. Three physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School		(1927) (1933) 87.4, 87.5, 92.2	89.4,
School of Med. of the Div. of the Biolog. Sciences		(1933)	90.5
University of Illinois College of Medicine		(1932)	90.1
Tulane University of Louisiana School of Medicine		(1932)	91.3
Harvard University Medical School		(1929) 88.4, (1931)	89.5
University of Minnesota Medical School		(1932) 82.3,* (1933) 83,* 85.1,* 85.5,* 85.5, 86.5,* 87, 87.2, 87.3,* 88.2, 88.4,* 88.6,* 89,* 89, 89.3,* 89.3,* 89.3,* 89.5,* 89.6,* 90.3,* 91.2,* 92.1,* (1934) 89.5	91.5,
St. Louis University School of Medicine		(1933)	87.4
Ohio State University College of Medicine		(1932)	84
University of Pennsylvania School of Medicine		(1931)	92.4
University of Pittsburgh School of Medicine		(1931)	90.5
McGill University Faculty of Medicine		(1931)	89.6
Universität Heidelberg Medizinische Fakultät		(1930)	84.3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Creighton University School of Medicine		(1933)	Nebraska
University of Nebraska College of Medicine		(1932)	Nebraska
University of Pennsylvania School of Medicine		(1931)	Penna.

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Minnesota Medical School		(1933)	N. B. M. Ex.

* This applicant has received his M.B. degree and will receive his M.D. degree on completion of internship.

Book Notices

The Chemistry of the Hormones. By Benjamin Harrow, Ph.D., Associate Professor of Chemistry, The City College, College of the City of New York, and Carl P. Sherwin, D.Sc., M.D., Dr.P.H., on the Staff of St. Vincent's Hospital and French Hospital, New York City. Cloth. Price, $2.50. Pp. 227. Baltimore: Williams & Wilkins Company, 1934.

This volume is largely a compilation from the published literature of methods of preparing extracts having physiologic or pharmacologic effects, from various tissues, body fluids and plants. The authors state in their preface that they have attempted to "put together a practical book—a book of use to the laboratory worker who wishes to prepare active hormone fractions or to isolate a chemically pure hormone; and of use to the student who wants a connected account dealing with the chemical characteristics of the hormones, in so far as they are known at present." Were this book a complete and critical summary of the literature in question, laboratory workers might find it a useful work of reference; unfortunately, it falls far short of the authors' aim in this respect. Consultation of original publications remains indispensable. It is a matter of grave concern for the present state of knowledge that the chemical characteristics of the hormones, "so far as they are known at present," can be encompassed in a mere 227 pages of text, of which a considerable portion is devoted to notes on biologic effects.

No doubt many investigators write things that they do not "know"; such material presumably would have no place in such a volume as this. Unfortunately there is little evidence that the present authors examined critically the material they chose to include.

The first chapter, on the thyroid, is perhaps the least subject to criticism, no doubt because the chemistry of thyroxine is by now amply understood. The succeeding chapters leave much to be desired. In a discussion of the parathyroid, Hanson's contribution is dismissed as "suggestive work" and is even subordinated in sequence to that of Berman, whose publication appeared a year after Hanson's original two communications in 1923, which were followed by three more the next year. Curiously, none of these five references are listed in the bibliography. Is it coincidence that the same peculiar sequence and omission occur in a recent review on this subject? There is now apparently no doubt that Hanson prepared highly active extracts of the parathyroid several years before Collip's comprehensive work in this field.

One is startled to find a section on the synthetic fat intarvin included in the chapter on insulin and to read that "Intarvin has the advantage of being active [sic] when given by mouth." Are the authors under the delusion that this fat is a hormone?

In the chapter on the pituitary hormones, the preliminary summary on the anterior lobe has apparently been copied verbatim (with omission of one or two brief statements) from a recent report of the Council on Pharmacy and Chemistry, yet not only is the section in question not included between quotation marks but reference to the Council's report is not even to be found in the bibliography following this section, though it is included as an anonymous publication following the section on the "female hormones." In the description of the method of Van Dyke and Wallen-Lawrence for preparing a growth-promoting extract of the pituitary, the statement in the original publication, "Y cc. of crude stock . . . are . . . reprecipitated by using 20 grams of anhydrous sodium sulphate per 100 cc. of solution," becomes, in the book under review, "Y cc. of the crude stock . . . is . . . reprecipitated with 20 grams anhydrous sodium sulfate in 100 cc. of water." Whereas the former statement is quantitative with respect to relative amounts of crude extract and precipitating agent, the sentence in the book under review defies comprehension.

In the section on the suprarenal hormones, "stimulation of the vagus center causing slowing of the heart" is given as a clinical application of epinephrine. This is hardly a proper therapeutic use for epinephrine but an undesirable side effect of large dosage that one would try to avoid in patients.

It is in the section on the suprarenal cortex that the authors best exhibit the deficiencies in critical judgment and in knowledge of pertinent literature that characterize the book as a whole. In a footnote the impression is conveyed that the discovery dates back only to 1932 that survival of animals after double suprarenalectomy is due to the presence of accessory tissue. The authors are apparently unacquainted with the fact that this was recognized at least twenty years before that. The average survival period of suprarenalectomized cats as reported by Rogoff and Stewart is stated to be eleven days for male cats and ten days (the actual figure in the original paper is ten and three-fourths days) for nonpregnant female cats. The authors do not mention that one eighth of the animals survived twenty days or longer, of which one lived twenty-nine and three-fourths days and another thirty-one and one-half. Yet reports by other workers in which the survival periods did not equal, much less exceed, the maximum period reported by Rogoff are accepted as indicating the use of potent products.

Hartman's salt precipitation method is presented presumably as providing a potent extract; it is not mentioned that Rogoff demonstrated that this method is worthless and that for this reason Hartman himself gave it up.

The authors, who should know better, give full credence to the spectacular accounts presented, not only in scientific journals but also in the lay press, of the remarkable recoveries of patients suffering from Addison's disease, after treatment with the allegedly potent cortical extracts of Hartman and of Swingle and Pfiffner, while they consider unconvincing the conservative and eminently reasonable claims of Rogoff. They report a case of Addison's syndrome in which the patient was "in a state of complete collapse"; within thirty-six hours after administration of the Swingle-Pfiffner preparation "a marked effect on appetite and strength was apparent. The patient, who had been so nauseated as to retain water with difficulty, now asked for wieners and sauerkraut and in lieu of the latter ate a double order of beefsteak with relish." While this patient was reported as doing nicely in the first publication on Nov. 7, 1930, and this was repeated as late as the end of December 1930 (the case was again mentioned in another paper the following month), a subsequent report in November 1931 showed that the patient was already dead on Nov. 11, 1930. The authors appear to be unacquainted with the fact that patients with Addison's disease often have spontaneous remissions, sometimes of a spectacular nature.

It is mentioned that Eagle found considerable amounts of choline in extracts prepared by the Swingle-Pfiffner method; a footnote indicates that this is denied by the latter investigators. It is not stated that Cleghorn reported the presence of histamine in such extracts a year before Eagle's paper appeared, nor do the authors appear to be aware of the fact that Hunt noted the presence of choline in suprarenal extracts thirty-five years ago.

Space is not available for a more complete analysis of this book; it represents a class of literature in endocrinology that unfortunately is rapidly increasing in volume.

La syphilis expérimentale: Étude critique et nouvelles recherches. Par G. Gastinel, professeur agrégé à la Faculté de médecine de Paris, et R. Pulvenis, chef de laboratoire à la Faculté de médecine de Paris. Monographie du laboratoire de bactériologie de la Faculté de médecine de Paris. Paper. Price, 45 francs. Pp. 244, with 23 illustrations. Paris: Masson & Cie, 1934.

This monograph deals with a critical study of what has been accomplished in experimental syphilis in the relatively short space of thirty years and with some of the authors' recent investigations, particularly on the Meinicke reaction. The major portion of the book is devoted to experimental syphilis of the rabbit and the mouse and to a discussion of various phases of syphilitic immunity. The importance of a biologic point of view in the evaluation of experimental results is properly emphasized, particularly with respect to the application of such results to problems of human syphilis. An essential requirement toward the achievement of the necessary biologic point of view would seem, however, to include a comprehensive and critical first-hand experience with the experimental infection in all its various aspects. For this reason it is to be regretted that the authors did not observe in their experimental material the rich variety and diversity of generalized lesions, which are a characteristic feature of

the infection in the rabbit. Such an experience is an invaluable aid to a better understanding of the many factors that should be taken into account in either a general or a particular consideration of the disease. The comparatively large space allotted to syphilitic infection of the mouse reflects the extent of contemporary interest in the subject. Until further work has demonstrated that the condition has other than what one may term an "animal test tube" significance, it would seem advisable to suspend judgment on its importance with respect to both experimental and human syphilis. The large number of references to the literature is impressive and should be of value to the laboratory worker and to the clinician interested in various phases of experimental syphilis. The authors have achieved an enviable record in their summaries of the essential points of the papers under discussion.

Histopathology of the Teeth and Their Surrounding Structures. By Rudolf Kronfeld, M.D., Professor of Special Histopathology, Director of Department of Research, Chicago College of Dental Surgery. Cloth. Price, $7. Pp. 479, with 385 illustrations. Philadelphia: Lea & Febiger, 1933.

This is by far the most satisfactory textbook on this subject in English and is comparable only with the books in German by Euler and Meyer and by Sigmund and Weber covering approximately the same ground. The excellent illustrations, for the most part original, are chiefly photomicrographs of sectioned human material and in a great many instances include teeth, soft tissues and bone in the same specimen. The subject matter is well organized, clearly presented and not rigidly limited to the presentation of the histologic picture of oral diseases. For example, in the chapter on dental caries six pages is devoted to a discussion of the clinical characteristics of the disease and experimental research. As stated in the introduction, comparatively little emphasis is placed on processes that have been presented adequately in earlier publications and textbooks and that others relatively new or unknown to the profession are considered more in detail. Except for dentigerous and median maxillary cysts, the subject of tumors and cysts is not included in the book. Each chapter is followed by an extensive bibliography. There is an adequate index. This book is heartily recommended to both dental students and others interested in oral microscopic changes.

Features in the Architecture of Physiological Function. By Joseph Barcroft, C.B.E., M.A., F.R.S. Cloth. Price, $5.50. Pp. 368, with 106 illustrations. New York: The Macmillan Company; Cambridge, England: University Press, 1934.

This book is a philosophical discussion of the mechanisms of the body whereby the internal conditions of existence are maintained at that nicety of adjustment necessary for man's intellectual supremacy. The experimental evidence for the supporting current biochemical and physiologic concepts are stressed constantly and the bibliography is conveniently given at the end of each chapter. There is a broad consideration of such details of the "fixité du milieu intérieur" as hydrogen ion concentration, temperature, oxygen supply and blood sugar, with the conclusion that variations in the factors are conditioned largely by the nervous system, which, in turn, proves to be the chief beneficiary of the resulting stable state. There are three chapters on storage materials, including glycogen, lipids, oxygen, iron, copper and blood. The high spot of interest in this fascinating book is the section which supports the view that "every adaptation is an integration." As an example, the author discusses fetal respiration, pointing out the part played by the maternal organism as well as by the fetus; anoxia, drawing on his own extensive experience as a physiologist; and the adjustment to muscular exercise, correlating in lucid style the considerable pertinent information currently available and indicating other, as yet unknown, possibilities. As contributory considerations of the vital equilibriums the "all or none" relation, the principles of antagonism and of maximal activity, as well as the duplication of mechanism, are discussed. In making use of both the classic and the more recent experimental observations, the author combines a discriminating open-mindedness with a benign conservatism. Doubtless there will be readers who object to certain apparent inaccuracies of statement and to the teleological flavor of certain portions; but when the author states that "not till the machinery for the exact regulation of the properties of the blood had been perfected up to a certain point did—I would say could—the magnificent development of man's intellectual powers take place," he effectively discriminates between the purposeful and the logical. Basing his conclusion on the developments in physiologic chemistry, the author chooses to "regard a phenomenon (structural or functional) as more likely to have a significance than not." The field has been viewed at once with close attention to detail and with magnificent detachment; the treatment is informal, at times personal, at others even whimsical, but always authoritative.

Aids to Pathological Technique. By David H. Haler, M.B., B.S., Pathologist, Infants Hospital, London, S. W. 1. Cloth. Price, $1.50. Pp. 187, with 18 illustrations. Baltimore: William Wood & Company, 1933.

This booklet, another of the "Students Aids Series," contains a brief description of the laboratory procedures most frequently employed in bacteriology, hematology, cytology, parasitology and biochemistry. The writer has presented one example of each method, which he has found to work best in actual practice. For medical students reviewing for examinations, and also for those doing laboratory work, this booklet contains concise and accurate instructions for the various examinations. There are also tables for recognition of Endamoeba histolytica, malarial parasites, normal hematologic appearances, and blood chemistry. A brief description of the preparation of culture mediums is added.

La gangosa et les rhino-pharyngites mutilantes des tropiques. Par le Dr. Georges Galinier de la Faculté de médecine de Paris. Paper. Pp. 87. Paris: Jouve & Cie, 1934.

This brochure discusses in considerable detail the subject of gangosa. As the author states in his historical notes, the name "gangosa" is Spanish and means "nasal voice." This nomenclature is derived from the fact that the ulceration and destruction, partial or otherwise, of the palate produces the peculiar nasal twang. The first chapter dwells considerably on the geographic distribution of the disease (it is encountered mostly in Oceanica) and also discusses the classification of the condition. Attention is called to the fact that in some phases it resembles yaws, syphilis, leprosy and sometimes tuberculosis in its involvement of the nose, mouth and pharynx. It is interesting to know it was members of the United States naval medical forces who were among the first to describe this disease in Guam. Then follow chapters on clinical forms and symptomatology. In speaking of the pathology, attention is called to the fact that the lesion is that of a granuloma. The Bordet-Wassermann reaction is often positive in these cases, just as it is in syphilis and in yaws. The differential diagnosis is often difficult and the author devotes considerable space to this phase of the subject. Several case histories are given at the end of the monograph and a rather complete bibliography is appended.

The Clinical Management of Horseshoe Kidney: A Study of Horseshoe Kidney Disease, Its Etiology, Pathology, Symptomatology, Diagnosis and Treatment. By Robert Gutierrez, A.B., M.D., F.A.C.S., Chief of Clinic of the Department of Urology, James Buchanan Brady Foundation of the New York Hospital. With a foreword by Dr. Edmond Papin. Cloth. Price, $3. Pp. 143, with 52 illustrations. New York: Paul B. Hoeber, Inc., 1934.

The author has made a thorough study of a subject that is of great interest not alone to urologists but to all clinicians interested in differential abdominal diagnosis. Renal fusion has not been recognized frequently on clinical examination and is usually first discovered on abdominal exploration or postmortem examination. The author believes that the symptoms caused by renal fusion are so distinct that they can be regarded as a separate clinical entity, to which he gives the name of horseshoe kidney syndrome. Although it is true that various symptoms such as the author describes are noted in some cases of renal fusion, it is open to question whether they are definite enough to be regarded as a diagnostic entity. All forms of anomaly in the urinary tract are subject to secondary pathologic complications, which are the usual cause of symptoms rather than the anatomic condition itself. It must also be remembered that various intra-abdominal lesions may be present which can cause symptoms such as he describes and, unless clinically recognized, they may be easily overlooked. That

the anomalous position of the horseshoe kidney exerts pressure on the adjacent nerves or blood vessels sufficient to cause pain has been previously inferred by other observers, but no definite evidence has been offered to prove this point. It is well known that renal fusion as well as other anomalies of renal position, such as renal dystopia and incomplete rotation, are frequently discovered in the course of routine urography, which cause no clinical symptoms.

The author believes that horseshoe kidney may be the cause of constipation and gastro-intestinal disorders. He does not, however, make it clear why renal fusion should cause such disturbance. In common with other observers, he refers to the so-called Rovsing sign as valuable in the recognition of horseshoe kidney. Other observers, however, have frequently failed to find this sign and have noted that similar reaction may be observed when no anomaly is present.

The author has made a careful study of the urographic data observed with horseshoe kidney and has added some interesting observations to those previously described. Included in the latter is a description of a urographic triangle with a minimum lower angle, which he has repeatedly observed with horseshoe kidney. The volume is profusely and graphically illustrated, and careful perusal of the various roentgenographic data which he has described should lead to more frequent recognition of this anomaly, particularly if excretory urography is employed in a routine way in doubtful abdominal conditions. The chapter on treatment is brief but contains considerable data of value.

Ultra-Violet Therapy in Eye Disease with a Review of the Action of Other Forms of Radiant Energy. By Frank W. Law, M.A., M.D., B.Chir., Assisting Surgeon, Central London Ophthalmic Hospital. Foreward by Sir Stewart Duke-Elder, M.A., D.Sc., M.D. Boards. Price, 5/. Pp. 78. Published for the Middlesex Hospital Press. London: John Murray, 1934.

The author reviews briefly the existing knowledge of light rays and discusses those of beneficial or therapeutic value. He reviews the use of ultraviolet radiation in its action on the eye, gives the technic for its application, and cites a number of case reports with his results in many eye conditions. His statement that ultraviolet therapy is of most value in "symptomatic" diseases of the eye and that in general local radiation it is of more value in its own sphere than in general application summarizes his view of the matter. He concludes: "General phototherapy has less value in ophthalmology than previous writings suggest; it is nevertheless a very useful adjunct in treatment, especially in such cases as phlyctenular disease, blepharitis and some forms of iridocyclitis. . . . Local phototherapy is of the utmost value in the treatment of all kinds of superficial lesions of the eye; in deeper lesions action is less certain." He devotes little space to radium therapy and combines the work on radium and x-rays because of their similar action. About radium he concludes: "The claims made for the therapeutic value of radium in ophthalmic conditions, especially in America, are too diverse and too enthusiastic. Radium is of proved value in the treatment of epibulbar and orbital neoplasms, especially of the malignant or vascular benign variety. The encouraging results obtained by its action on intraocular malignant growths justify its further use in this field." Infra-red rays play no part as a therapeutic agent in ophthalmology and are given little space. The book is brief and contains the essentials of technic for the use of these therapeutic agents but adds little to the existing knowledge of the agent. It is chiefly a summary of the author's results at the Middlesex Hospital.

Recent Advances in Medicine: Clinical, Laboratory, Therapeutic. By G. E. Beaumont, M.A., D.M., F.R.C.P., Physician, with charge of Outpatients, Middlesex Hospital, and E. C. Dodds, D.Sc., Ph.D., M.D., Courtauld Professor of Biochemistry in the University of London. Seventh edition. Cloth. Price, $4. Pp. 485, with 58 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1934.

This edition is evidence of deserved popularity. There are many additions to the text and illustrations. The chapter on hormones and vitamins is entirely new and gives a timely review of present knowledge. The sections on the blood and the heart and kidney are thoroughly revised and include all recent contributions. The text is concise and should be useful not only to the student but also to the general practitioner.

Traité de médecine des enfants. Publié sous la direction de P. Nobécourt et L. Babonneix. Secrétaires de la rédaction: J. Cathala et J. Hutinel. Tome I: [Maladies de la nutrition de la croissance et la path. d. glandes endocrines.] Boards. Price, 170 francs; 700 francs per set of 5 volumes. Pp. 989, with illustrations. Tome II: [Les infections: Maladies du sang; Affections des organes hématopoiétiques.] Boards. Price, 170 francs. Pp. 960, with illustrations. Tome III: [Les affections de l'appareil circulatoire; celles de l'appareil respiratoire; le début des affections de l'appareil digestif.] Boards. Price, 170 francs. Pp. 1086, with illustrations. Tome IV: [Les affections des voies digestives (fin); celles de l'appareil génito-urinaire; les intoxications; les affections des os; la dermatologie; l'ophtalmologie; la psychiatrie.]. Boards. Price, 170 francs. Pp. 956, with illustrations. Tome V: [La neurologie; la thérapeutique et la table alphabétique générale des maitières des cinq volumes.] Boards. Pp. 876, with illustrations. Paris: Masson & Cie, 1934.

This system of pediatrics, appearing in French in five beautifully bound volumes, represents the writings of the best minds in French pediatrics today. These volumes supersede the three older French treatises on pediatrics and contain freshly written and modern material. The editors-in-chief, Pierre Nobécourt, professor at the University of Paris and director of the Hôpital des enfants malades, and Leon Babonneix, are men of international reputations. They were aided by Jean Cathala and Jean Hutinel, who unfortunately died shortly before the volumes were completed.

The material in the five volumes is divided as follows: Volume I contains the general table of contents and introduction, and the chapter on normal growth and development, diseases of nutrition and pathologic endocrine disturbances. Volume II deals with the acute infectious diseases and diseases of the blood and blood forming organs. Volume III contains the chapters on the circulation, respiration and digestive tract. Volume IV deals with disorders of the genito-urinary tract, the mouth, the skin and the eyes. Psychiatric disturbances and accidental poisoning are included in this volume. Volume V, the concluding volume, deals with neurology and materia medica, and therapeutics, and contains the general alphabetical index to the five volumes of the system.

As in all systems to which numerous authors have contributed, the style, handling of material and value of the various chapters vary. Among those which stand out for their excellence in volume I are the chapters on growth and development by Nobécourt and his assistants, and the chapter on prematurity by Paul Rohmer of Strasbourg. In volume II there is an excellent chapter on diphtheria by Grenet, with references. The chapter on typhoid could have dealt more specifically with the peculiarities of this disease in infants and young children. The chapter on scarlet fever, by Gautier, is excellent in character. His analysis of the etiology and serum therapy of this disease is well balanced. The chapter on congenital syphilis by Péhu is monographic. It consists of more than 150 pages of excellent material and is written by an authority on this subject. A complete list of references is given at the end of each topic discussed. The chapters on blood are unfortunately weak. The colored plates are far below standard. Descriptions of fourth, fifth and sixth diseases may be found in volume II and are described in four pages for the elucidation of the uninitiated.

Volume III contains the chapters on the heart and circulation and on respiratory and gastro-intestinal disorders. The treatment of the cardiovascular system is hardly adequate, while the diseases of the upper respiratory tract and the pneumonias are better handled. The chapter on bronchiectasis is full and excellent, and the subject of pulmonary tuberculosis is well handled. R. A. Marguezy has done well with diseases of the mediastinum, tracheobronchial adenopathy being remarkably well illustrated and discussed, as are the tumors of the mediastinum. In the chapter on foreign bodies in the esophagus it seems odd to see an illustration of the technic for removing a plate or bridge of false teeth in a treatise on pediatrics. Lereboullet has written an excellent article on vomiting in infants and children, including an excellent description of hypertrophic pyloric stenosis. The chapters on the nutritional diseases, dyspepsias and alimentary intoxication by Cathala are interesing in that they give the French point of view. Rohmer has done well with the chapters on megacolon and celiac disease.

In volume IV the best chapters are again those by Péhu on the bone changes in congenital syphilis. The chapter on diseases of the skin is well illustrated, while the chapter on

psychiatry is an elementary outline, without the hoped for depth which this subject deserves.

Volume V concludes the work with chapters on neurology and therapeutics. A chapter on acrodynia by Pichon is well written. Therapeutics includes drugs and dosages, climatotherapy and physical therapy.

This system of modern French pediatrics will make an excellent addition to the libraries of those interested in the diseases of infants and children.

The Pocket Anatomy. By C. H. Fagge, M.B., M.S., F.R.C.S. Ninth edition [of "Alds to Anatomy"]. Cloth. Price, $2. Pp. 333. Baltimore: William Wood & Company, 1933.

This pocket anatomy, the ninth edition in the "Students Aids Series," is an excellent compendium of anatomy. It has adopted the new English terminology approved by the Anatomical Society of Great Britain and Ireland. A glossary of the more noticeable changes from the old terminology used in the eighth edition is appended. The subjects are considered in the following order: (1) articulations, (2) muscles, (3) vascular system, (4) lymphatic system, (5) nervous system, (6) organs of digestion, (7) organs of voice and respiration, (8) urinary organs, (9) genital organs, (10) ductless glands, (11) special sense organs.

Fundamentals of Biochemistry in Relation to Human Physiology. By T. R. Parsons, B.Sc., M.A. Fourth edition. Cloth. Price, $3. Pp. 435, with 26 illustrations. Baltimore: William Wood & Company; Cambridge, England: W. Heffer & Sons, Ltd., 1933.

This is an excellent textbook. The well chosen subject matter is written in a simple and entertaining style without sacrifice of the fundamental general principles. The presentation is distinctly more physiologic than chemical. The subject is introduced by a chemical consideration of proteins, followed by their digestion and metabolism. This general plan is followed in the treatment of purines, lipins and carbohydrates. The nomenclature followed in the chemical naming of disaccharides is misleading. For instance, maltose is called α-glucose-α-glucose although the structural formula given suggests α-glucose-β-glucoside. The author assumes that glycogen formation for fatty acids is so well established as a result of studies of the respiratory quotient in hibernating animals that he indicates it as a regular source of glycogen in carbohydrate metabolism. The fuel requirements of the human body are well treated. Enzymes and oxidation catalysts, vitamins, protective synthetic mechanisms, pigments, the respiratory gases and the application of physical chemistry are the titles of the concluding chapters. A curious error is made in considering the reserve base in the red cells to be due to sodium rather than to potassium. Other excellent features of the book are the fitting quotations at the opening of each chapter, the frequent use of excellent diagrams for summarizing information and establishing relations, the well chosen lists of reference works at the close of each chapter, and the subject index.

Aids to Qualitative Inorganic Analysis. By R. G. Austin, B.Sc., A.I.C., F.R.M.S., Associate of University College, Southampton. With an introduction by R. H. A. Plimmer, D.Sc., Professor of Chemistry in the University of London at St. Thomas's Hospital Medical School. Cloth. Price, $1.50. Pp. 204, with 9 illustrations. Baltimore: William Wood & Company, 1933.

This little book of the "Students Aids Series" has been written to guide medical students in their work in qualitative analysis, especially in the analysis of simple inorganic compounds. It provides an excellent system with analytic tables to guide the student in his approach to qualitative work. For the identification of unknown substances the booklet will be a welcome aid to students in chemistry. Mr. R. G. Austin, after many years of experience with students, has outlined a systematic procedure and at the same time gives clear explanations of the chemical reactions involved. Prominence is given to "dry tests," which shorten the time required to identify such substances as the salts of mercury, arsenic, ammonia, nitrates and oxides. The preparation of a list of inorganic substances of importance in medicine and pharmacy has been added. The booklet is well printed, with plenty of spacing to ensure ease in reading and more rapid reference. It should prove useful to undergraduates in chemistry.

Medicolegal

Contract to Testify as Expert Witness Valid.—The plaintiff, a physician, had professionally observed the condition of the defendant's wife, but whether with a view to treatment or with a view to giving evidence the reported decision does not make clear. Subsequently the defendant desired the plaintiff's evidence in a suit to which the defendant and his wife were parties, as to blows or bruises on the wife's body or anything in her condition that might lead the plaintiff to believe that she had been subjected to violence or physical mistreatment. The plaintiff expressed his unwillingness to testify, and a subpena was served on him. After the service of the subpena the defendant promised the physician to pay him for testifying the amount that he would receive for a gallbladder or appendicitis operation. The plaintiff then attended the trial, gave expert testimony and sent the defendant his bill. When the defendant refused to pay, the plaintiff brought action against him. Judgment was given for the plaintiff and affirmed by the supreme court. The defendant appealed to the Court of Errors and Appeals of New Jersey.

It is quite obvious, said the Court of Errors and Appeals, that the plaintiff testified as an expert. He not only stated the facts observed by him but also expressed his professional judgment as to the condition he found and its cause. The question was squarely presented, therefore, whether a contract such as the plaintiff made was void as against public policy. It is quite clear, said the court, that all knowledge which a witness has of the actual facts of litigation, whether the witness be a professional man or a layman, is available and that a witness is amenable to subpena and compellable to give evidence of such facts. But the experience, training and skill of a professional man, acquired by years of study and practice in a given profession or calling, are not the property of the litigants. They belong to the professional man in his chosen occupation. Neither justice nor public policy, in the opinion of the court, forbids that the expert shall retain such knowledge and skill free from disclosure otherwise than by his voluntary act. This is true whether disclosure be sought for compensation for the exercise of his skill, or in the expression of his professional judgment privately, or as a witness in a court of justice. The right to compensation for services so rendered, the court thought, was generally recognized by the bar of New Jersey and compensation paid accordingly. The testimony of experts often involves long and tedious preparation for testifying, as well as the giving of results of training and experience to the appointed judicial investigators. It would be unjust and without legal justification to withhold payment therefore.

"Our conclusion," said the Court of Errors and Appeals, "is that an expert witness cannot as such be compelled to give testimony in response to subpena, and, if such expert testimony is called for and given, it is the right of such person to contract for and receive proper and adequate compensation therefor."—*Stanton v. Rushmore (N. J.), 169 A. 721.*

Evidence: Presumption that Woman is Capable of Childbearing Not Absolute.—The testator, after making certain bequests, devised the residue of his estate to a trust company, in trust to pay an income to his daughter during her life and on her death to her lawful issue. If she died without issue, the residuary estate was to be distributed among certain charitable institutions and societies. At the time of the testator's death, the daughter was 50 years old. Seven years before that time she had had her uterus, fallopian tubes and both ovaries removed. Unless under such conditions she was capable of bearing children, the residuary estate would inevitably pass on her death to the charitable institutions named in the will, and the residuary estate, less the value of the daughter's life interest in it, was a charitable bequest, to be deducted from the gross estate before computation of the estate tax.

The commissioner of internal revenue contended that the age of the daughter and the sterilizing operation to which she had been subjected were immaterial, that the law conclusively presumed that she was capable of bearing children as long as she lived, and that the legal presumption controlled even though

the organs of reproduction had been completely removed. He fixed the value of the gross estate accordingly and demanded payment of the federal estate tax on that basis. The administrator of the testator's estate paid the tax and then filed a claim for a refund. He contended that the commissioner of internal revenue erred; that in computing the value of the estate the commissioner should have deducted the value of the residuary estate, less the daughter's life interest in it, since it was certain to go to charitable institutions and societies on her death, as she was incapable of bearing offspring. He brought suit against the United States in the United States court of claims to recover the amount of the excess tax paid. The court entered judgment in the administrator's favor,[1] and the United States, by writ of certiorari, carried the case to the United States Supreme Court.

Where only the element of age is involved, said the Supreme Court, the presumption that a woman is capable of childbearing has been held to be conclusive, but the conclusiveness of the presumption even in such cases has not been universally upheld. The English courts have given the presumption a considerable degree of flexibility and in a large number of cases have refused to give it a conclusive effect. American courts have adhered to a more rigid view. Few cases have arisen in which elements other than age were present, and the conclusive character of the presumption in such cases is by no means established. The presumption of a woman's continuing capacity for childbearing originated when medical knowledge was meager, centuries before the discovery of anesthetics and before surgical operations were undertaken such as that to which the testator's daughter was subjected. Not until a comparatively recent period was the effect of such an operation determinable and the fact incontrovertibly established that a woman so operated on is permanently incapable of bearing children. The Supreme Court could see no ground of expediency or policy that called for a hard and fast application of this presumption of incapacity to bear children, when facts put beyond the range of doubt the absence of such capacity. The birth of a child to the daughter of the testator after his death was so plainly impossible that as a practical matter hazard disappears from the problem; if her interest had been offered for sale in the open market during her lifetime, a suggestion of the possibility of issue would have been ignored by every intelligent bidder as utterly destitute of reason. The judgment of the court of claims in favor of the administrator was affirmed.—*United States v. Provident Trust Co., 54 Sup. Ct. 389.*

Workmen's Compensation Acts: Paralysis Agitans Following Trauma.—On Nov. 19, 1928, the hair of the decedent, an able-bodied woman about 45 years old, caught on a revolving shaft in the cannery in which she was employed. A strip of her hair was pulled out, about an 1½ to 2 inches wide and extending from the base of the skull almost to the forehead. She continued to work for a short period after the accident and then was taken home, where she remained for eight days. When she returned to work she was so nervous that she wept at the sight of the cannery and had to be assigned to other duties in a part of the building other than that in which the accident had occurred. She worked until December 7, when the cannery closed. She did not go back to work but did perform her household duties. Gradually she lost strength and her general health failed. About two years after the injury, numbness was discovered in her right hand and she was unable to hold a sewing needle. Late in 1931 tremors of the hand and arm became apparent. These conditions extended to other parts of the body, with a certain degree of rigidity of the members affected, so that she became totally disabled and died.

During her lifetime she filed a claim for compensation with the industrial accident board, which the board denied. An appeal was taken to the district court, Kootenai county. The claimant having died, her son was appointed administrator of her estate and substituted as a party plaintiff. From an order of the district court affirming the order of the industrial accident board denying compensation, the administrator appealed to the Supreme Court of Idaho.

Four physicians testified before the industrial accident board on behalf of the claimant and one on behalf of the canning company. All five agreed that the claimant was suffering from paralysis agitans and that the exact cause of the disease is unknown. Shock, fright, trauma, injuries, infections and syphilis, it was testified, precipitate or aggravate the disease or are its exciting causes. The four physicians who testified for the claimant testified that the injury received was the exciting cause of the claimant's paralysis agitans. The physician who testified on behalf of her employer, the canning company, was positive that her injury in no way contributed to or caused her illness. If the injury had been the exciting cause, he testified, the tremors, paralysis and rigidity would have appeared shortly after the injury, at least within a few weeks and under no conditions beyond one year. The deceased, this witness contended, did not receive a severe brain injury; she was not thrown against the revolving shaft, nor did she fall. Hair grew where hair had been pulled out, showing that there was no severe scalp injury. The deceased, in his opinion, suffered from encephalitis and phlebitis, and encephalitis is one of the principal causes of paralysis agitans. The encephalitis and phlebitis, he believed, were probably the exciting causes of the claimant's paralysis agitans.

There is in this case, said the Supreme Court, a substantial and direct conflict in the evidence as to what was the exciting cause of the paralysis with which the deceased was afflicted. All the medical testimony for the claimant was to the effect that the exciting cause was the injury she had sustained; the medical testimony on behalf of the canning company was to the contrary. There was ample evidence to support the findings, conclusion and award made by the industrial accident board and affirmed by the district court, to the effect that the injury was not the exciting cause of the paralysis agitans with which the deceased was afflicted. The Supreme Court, therefore, affirmed the judgment of the district court denying compensation.—*Larson v. Callahan Canning Co. of Coeur d'Alene (Ida.), 27 P. (2d.) 967.*

1. Provident Trust Co. v. United States, 2 Fed. Supp. 472, J. A. M. A. **101:** 1508 (Nov. 4) 1933.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Sept. 9-14. Dr. William P. Wherry, 107 South 17th Street, Omaha, Executive Secretary.

American Association of Railway Surgeons, Chicago, August 20-22. Dr. Louis J. Mitchell, 21 East Van Buren Street, Chicago, Secretary.

American Congress of Physical Therapy, Philadelphia, Sept. 10-13. Dr. Nathan H. Polmer, 921 Canal Street, New Orleans, Secretary.

American Hospital Association, Philadelphia, Sept. 24-28. Dr. Bert W. Caldwell, 18 East Division Street, Chicago, Executive Secretary.

American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. Kendall Emerson, 50 West 50th Street, New York, Executive Secretary.

Colorado State Medical Society, Colorado Springs, Sept. 19-22. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.

Delaware, Medical Society of, Dover, Oct. 9-10. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Idaho State Medical Association, Lewiston, Sept. 7-8. Dr. Harold W. Stone, 105 North Eighth Street, Boise, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 9-11. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 1-4. Dr. Hugh Wilkinson, 750 Minnesota Avenue, Kansas City, Kan., Secretary.

Kentucky State Medical Association, Harlan, Oct. 1-4. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Battle Creek, Sept. 12-14. Dr. F. C. Warnshuis, 148 Monroe Avenue, Grand Rapids, Secretary.

Nevada State Medical Association, Reno, Sept. 21-22. Dr. Horace J. Brown, 120 North Virginia Street, Reno, Secretary.

New England Surgical Society, Burlington, Vt., Sept. 28-29. Dr. J. M. Birnie, 14 Chestnut Street, Springfield, Mass., Secretary.

Northern Minnesota Medical Association, Brainerd, Sept. 10-11. Dr. Oscar O. Larsen, Detroit Lakes, Secretary.

Ohio State Medical Association, Columbus, Oct. 4-6. Mr. Don K. Martin, 1005 Hartman Theatre Building, Columbus, Secretary.

Oregon State Medical Society, Corvallis, Sept. 27-29. Dr. L. Howard Smith, Medical Arts Building, Portland, Secretary.

Pacific Northwest Orthopedic Association, Seattle, Sept. 1. Dr. J. C. Brugman, 1215 Fourth Avenue, Seattle, Secretary.

Pennsylvania, Medical Society of the State of, Wilkes-Barre, Oct. 1-4. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Virginia, Medical Society of, Alexandria, Oct. 9-11. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Washington State Medical Association, Spokane, Sept. 10-13. Dr. Curtis H. Thomson, 1305 Fourth Avenue, Seattle, Secretary.

Western Branch of American Public Health Association, Pasadena, Calif., Sept. 3-6. Dr. W. P. Shepard, 600 Stockton Street, San Francisco, Secretary.

Wisconsin, State Medical Society of, Green Bay, Sept. 12-14. Mr. J. G. Crownhart, 119 East Washington Avenue, Madison, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

21: 253-500 (June) 1934

Hodgkin's Disease of the Lung. S. E. Moolten, New York.—p. 253.
Experimental Investigation Concerning the Nature of Contagious Lymphosarcoma of Dogs. W. A. DeMonbreun and E. W. Goodpasture, Nashville, Tenn.—p. 295.
*Carcinoma of the Rectum in Youth: Report of Three Cases. L. I. Ross, Cleveland.—p. 322.
Hormones in Cancer: VIII. Influence of the Hypophysis. F. Bischoff, I. C. Maxwell and H. J. Ullmann; histologic report by R. D. Evans, Santa Barbara, Calif.—p. 329.
Effect of Anterior Pituitary Hormones on the Growth of Mouse Sarcoma. O. F. Krehbiel, C. D. Haagensen and Herma Plantenga, New York. —p. 346.
*Primary Carcinoma of the Liver with Extensive Metastasis to the Right Heart and Tumor Thrombosis of the Inferior Vena Cava. A. L. Culpepper and E. von Haam, New Orleans.—p. 355.
Giant Cell Tumor of the Spine. H. Milch, New York.—p. 363.
Cancer Associated with Leukemia. B. F. Schreiner and W. H. Wehr, Buffalo.—p. 368.
Plastic Induration of the Penis. A. Soiland and L. Lindberg, Los Angeles.—p. 372.
Attempts to Produce Immunity to Transplantable Rat Tumors with Chicken Blood. C. D. Haagensen, New York.—p. 376.
Interpretation of Dosage in Roentgens. M. C. Reinhard and H. L. Goltz, Buffalo.—p. 380.
Cancer Education: Note. H. C. Saltzstein, Detroit.—p. 384.

Carcinoma of the Rectum in Youth.—Ross shows that carcinoma of the rectum is not limited to the declining decades of life by presenting three cases in patients 21 years of age and younger. The relative rarity of cancer prior to the so-called cancer age appears still to be a definite factor in preventing the early correct diagnosis of such lesions. This reluctance to make a diagnosis of cancer because of the youth of the patient was responsible in the first of the three cases for the rectal symptoms being attributed to tuberculous stenosis and in the third case it led to an initial diagnosis of ulcerative colitis. A review of the literature furnishes adequate evidence that cancer, while uncommon, is by no means a rare disease of youth. Persons less than 30 years of age appear to comprise from 1 to 3 per cent of those afflicted with carcinoma. Rectal cancer accounts for a proportion of these youthful victims of cancer. From 2 to 4 per cent of all rectal carcinomas occur in persons less than 30 years of age. The occurrence of rectal carcinoma in patients less than 20 years of age is sufficiently uncommon to warrant more than passing notice. One of the author's cases is the sixtieth thus far reported. Rankin and Comfort found little variation in the symptomatology of rectal cancer with the age of the patient. The principal symptoms in all cases were a change of intestinal habit (constipation or diarrhea) and rectal bleeding. It was found, however, that carcinomas arising in the early decades of life are apparently more malignant, as indicated by the shorter duration of symptoms, the greater number of inoperable cases, and the decreased percentage of cures lasting three and five years. Each of the growths was readily palpable on simple digital rectal examination. No special laboratory procedure was needed to establish a firm clinical suspicion of the nature of the malady.

Primary Carcinoma of Liver.—Culpepper and von Haam report a case of primary carcinoma of the liver in which no symptoms were observed referable to the liver, which was the site of the primary lesion. Histologically, the liver showed the beginning of a cirrhotic process with a slight increase of the periportal fibrous tissue and some signs of liver cell regeneration. The two complications that led to the death of the patient and dominated so exclusively the clinical picture were tumor thrombosis of the inferior vena cava and metastasis of the tumor to the right auricle of the heart. Invasion into the blood vessels is one of the characteristic features of primary cancer of the liver. Statistics show that the portal branches of the liver vessels are far more frequently and earlier invaded than the hepatic veins or the branches of the liver artery. This peculiar fact explains the rapid spread of the tumor in the liver itself and the later and rare appearance of extrahepatic metastasis. If the tumor has penetrated into the large branches of the hepatic veins, it may or may not spread into the inferior vena cava and lead to complete or partial obstruction of this vessel. Complete obliteration of the inferior vena cava by a tumor thrombus is rare. The tumor thrombus extended about 1 cm. into the vena cava in the direction of the blood stream. The thrombus below the opening of the hepatic veins into the vena cava was only a secondary blood thrombus. The tumor node in the right auricle of the heart was completely separated from the thrombotic process in the vena cava and represented a metastasis of the tumor to the heart. The tumor mass in the right auricle was larger and firmer than the tumor thrombus in the inferior vena cava. It was attached to the endocardium of the auricle and reached like a ball valve into the atrium of the heart. Macroscopically, the tumor in the right auricle had the appearance of being an older growth than the friable and more loose tumor thrombus in the vena cava, an opinion that is supported by clinical data. The complaints of the patient were mainly shortness of breath and swelling of the ankles, which was symmetrical and responded favorably to therapy for some time. The kidney function could also be greatly increased in the beginning but not in the later stages of the disease. The classic diagnostic criterion for thrombi of the inferior vena cava, namely, collateral circulation, was not observed. The patient came to the hospital with beginning heart failure caused by the tumor in the right auricle; later, the tumor thrombus of the inferior vena cava developed and hastened death. A ball valve action of the huge tumor mass in the right auricle might have caused the sudden death of the patient. The tumor metastasis to the heart was apparently the cause of the cardiovascular symptoms, which were the only complaints of the patient. For this reason, the case represents a pathologic and clinical rarity.

American J. Digestive Diseases and Nutrition, Chicago

1: 221-288 (June) 1934

Results of Treatment, Medical and Surgical, in Gallbladder Disease, from a Clinician's Point of View. T. R. Brown, Baltimore.—p. 221.
Late Manifestations of Amebiasis. R. W. Mendelson, Albuquerque, N. M.—p. 228.
*Complement Fixation Test for Amebiasis: Preliminary Report. E. Weiss and L. Arnold, Chicago.—p. 231.
Lambliasis Simulating Cholelithiasis: Report of Two Instances with Review of Pertinent Facts Relative to the Clinical and Pathologic Significance of Lamblia in Biliary Tract and in the Bowel. M. Golob, New York.—p. 233.
*Brilliant Blue FCF: New Dye for Diagnostic Gastro-Intestinal Studies: Preliminary Report. A. C. Taylor, Madison, Wis.—p. 239.
Occurrence of a Pernicious Anemia Syndrome in the Presence of Normal Gastric Acidity: Report of Instance. A. L. Levin, New Orleans. —p. 240.
Influence of Pylorus on Regulation of Acidity of Gastric Secretion. W. W. Lermann and L. M. Nelson Jr., Pittsburgh.—p. 245.
Study of Obesity in Outpatient Clinic. E. C. Beck and R. S. Hubbard, Buffalo.—p. 250.
Incidence and Significance of Disease of Gallbladder and Liver in Pernicious Anemia. F. H. Bethell, Ann Arbor, Mich., and B. D. Harrington, Indianapolis.—p. 256.
Factors of Error in Roentgenologic Distinction Between Normal and Diseased Stomach and Duodenum. B. R. Kirklin, Rochester, Minn. —p. 260.
Conservative Surgical Treatment of Ulcer of Stomach and Duodenum. E. S. Judd and G. W. Waldron, Rochester, Minn.—p. 262.
Analysis of Results of Biliary Tract Surgery. J. T. Howard, Baltimore. —p. 270.

Complement Fixation Test for Amebiasis.—Weiss and Arnold employed this test in eight cases of acute and nineteen cases of chronic amebiasis, as well as in sixty-one carriers. Blood samples were obtained and the results were later compared with the feces observations and the type and duration of treatment. The results of treatment show that the stool becomes negative before the complement fixing antibodies disappear from the serums. The discrepancies between the feces examinations for parasites and the serologic blood tests are found in the weakly positive group of patients who have been treated and whose feces are becoming negative.

New Dye for Diagnostic Gastro-Intestinal Studies.—Taylor administered orally or by enema brilliant blue FCF to twenty or more patients presenting a variety of disease conditions. In no case was there any gastro-intestinal or general toxic reaction, although the dose of dye ranged from 300 to 500 mg. If much larger doses were given, a slight diarrhea resulted. When the dye appeared in the formed stool, the line of demarcation was sharp and the disappearance from the stool also was definite though not quite so sharp. With this range of dosage there was no pigmentation of the urine by the dye, thus indicating absence of systemic absorption. The rate of travel through the intestinal tract varied with the patient or the disease, with a normal appearance in the stool in about twenty-four to thirty-six hours and a disappearance in about forty-eight to seventy-two hours. Fecal fistulas from various sites along the gastro-intestinal tract showed the passage of the dye. At the cecum, the dye appeared in from two to five hours, while in the descending colon it appeared in from six to nine hours.

American J. Obstetrics and Gynecology, St. Louis

27: 793-950 (June) 1934

Importance of Proper Nomenclature in Puerperal Sepsis. A. F. Lash and E. J. DeCosta, Chicago.—p. 793.
Calcium Deficiency in Pregnancy and Lactation: Clinical Investigation. A. M. Mendenhall and J. C. Drake, Indianapolis.—p. 800.
Interpretation of Weight Changes During Pregnancy. H. H. Cummings, Ann Arbor, Mich.—p. 808.
Mild Symptoms from Rupture of Follicle Cyst or Corpus Luteum. J. P. Pratt, Detroit.—p. 816.
Krukenberg Tumors of the Ovary. J. C. Masson, Rochester, Minn.—p. 825.
Constitutional Origin of Cerebral Disease in the New-Born. W. R. Shannon, St. Paul.—p. 830.
Posterior Vaginal Hernia: Report of Case. W. T. Black, Memphis, Tenn.—p. 837.
Hemoperitoneum Resulting from Hepatic Birth Traumatism. G. Rogers, Chicago.—p. 841.
*Parasacral Anesthesia in Obstetrics. Beatrice E. Tucker and H. B. W. Benaron, Chicago.—p. 850.
Experimental Studies of Puerperal Infection. I. Susceptibility of Pregnant Mice to Intraperitoneal Inoculations of Hemolytic Streptococci: II. Study of Survival of Hemolytic Streptococci in the Vagina of Rabbits During Pregnancy. C. C. Torrance, Albany, N. Y.—p. 863.
Id.: III. Effect of Pregnancy on Reserves of Vitamin A in the Liver of Rabbits. C. C. Torrance, Albany, N. Y.—p. 868.
Anatomy and Histology of Placental Circulation. P. J. Kearns, Montreal.—p. 870.
*Evaluation of Maternal Nitrogen and Mineral Needs During Embryonic and Infant Development. Icie G. Macy and Helen A. Hunscher, Detroit.—p. 878.
Observations on One Hundred and One Cases of Placenta Praevia Delivered by Abdominal Cesarean Section. I. A. Siegel, Baltimore.—p. 889.
Neoskiodan in Amniography. E. L. Cornell and J. T. Case, Chicago.—p. 894.
Rhabdomyoma of the Hymen: Report of Case in a Child. A. C. Edwards, Sheboygan, Wis., and A. L. Richardson, Detroit.—p. 896.
Roentgenographic Diagnosis of Anencephalus: Report of Five Cases. T. B. Weinberg, New York.—p. 901.
Krukenberg Tumor of the Ovary. M. V. Armstrong and S. A. Wolfe, Brooklyn.—p. 906.
Prolapsus Uteri Near Term. W. B. Serbin, Chicago.—p. 910.
Accidental Injection of Utero-Ovarian Venous System During Lipiodol Uterosalpinography. W. A. Coventry, Duluth, Minn.—p. 912.
Rupture of Uterus Through a Cesarean Scar After Two Normal Deliveries Following a Classic Cesarean Section. H. W. Yates and H. J. Rezanka, Detroit.—p. 914.
*Copper Ionization for the Treatment of Leukorrhea in Virgins. D. W. Tovey, New York.—p. 916.
Sarcoma Arising in an Ovarian Fibroma. C. G. Johnson and S. H. Wills, New Orleans.—p. 918.
Vaginal Stethoscope for Use in Locating a Placenta in the Lower Uterine Segment. C. M. Turman, Philadelphia.—p. 919.

Parasacral Anesthesia in Obstetrics.—Tucker and Benaron present the following results obtained with parasacral anesthesia in fifty operative obstetric cases: 1. Parasacral anesthesia is practical for major operative obstetric cases. Relaxation of the uterus occurs for from fifteen to twenty minutes following the injection and in some cases is sufficient for version and extraction, for manual rotation of a posterior head and for the Pinard maneuver in bringing down a foot in single breech. It is of value in breech deliveries, giving marked relaxation of the entire pelvic floor, thus facilitating all the maneuvers for the extraction of the aftercoming arms and head. Episiotomy and perineorrhaphy, Dührssen's incisions and trachelorrhaphy may be painlessly done. Traction pain is abolished, and a difficult application of forceps can be painlessly performed, with the added advantage of utilizing the mother's auxiliary powers. 2. The engaged head offers no obstacle to the induction of this type of anesthesia. 3. There is no appreciable alteration of blood pressure or pulse rate, and the procedure is unattended by any signs of shock or collapse. 4. The loss of blood in six cases was above normal. 5. The puerperium was in no way affected by the procedure. 6. In two cases there was complete failure of anesthesia, and ether was resorted to. 7. In seven cases it was necessary to complement parasacral anesthesia with local infiltration in order to perform episiotomy and repair painlessly. The authors point out that in a teaching clinic, in which the duration of an operation is prolonged of necessity, this type of anesthesia is more satisfactory than inhalation methods. It is a valuable adjunct to the armamentarium of the obstetrician, especially when an inhalation anesthetic is contraindicated. This type of local anesthesia produces a minimum of shock to the patient and its particular sphere lies in the class of cases requiring a difficult, time-consuming operative procedure.

Evaluation of Maternal Nitrogen and Mineral Needs.—Macy and Hunscher state that evidence from an analysis of various types of quantitative chemical and physiologic data on the nutritive demands of fetal and maternal metabolism indicates that a specific scientific dietary dictum may be advantageous during reproduction in endowing the child with nutritional stability, protecting the maternal tissues from metabolic loss, and providing for a storage to meet all needs of maternity. From an evaluation of maternal nitrogen and mineral needs during embryonic and infant development, it seems advantageous to provide a daily supply of from 70 to 100 Gm. of protein, and a minimum of 1.6 Gm. of calcium, 2 Gm. of phosphorus, 0.3 Gm. of magnesium and 20 mg. of iron. From available scientific evidence, human lactation requires a greater amount of all food nutrients than does pregnancy. The necessity of fortifying the maternal diet with sufficient amounts of vitamins is indicated.

Copper Ionization for Treatment of Leukorrhea.—Tovey outlines a method of copper ionization for the treatment of leukorrhea in virgins in which a special speculum is used, which consists of a cystoscopic tube with a handle large enough for the patient to hold. A small copper intracervical electrode is inserted up to the internal os. A large indifferent electrode is placed under the back, and from 4 to 10 milliamperes of current is given with the positive pole. After twenty minutes the current is turned off and the negative current is used to release the copper electrode. In case of a pinhole os the tip of the copper electrode is pressed against the external os and the negative current is turned on until the os dilates, after which the current is reversed and copper ionization is given for twenty minutes. In one case of pinhole os with an enlarged dilated cervix, half a drachm of foul, colon-smelling secretion was freed when the os was dilated. The author has treated twenty-five virgins, from 15 to 25 years of age. He considers copper ionization an extremely satisfactory method of treatment. From four to eight treatments are necessary to cure the cervicitis. Treatment is painless.

American Journal of Physiology, Baltimore

109: 1-192 (July 1) 1934

Tobacco Smoking in Relation to Blood Sugar, Blood Lactic Acid and Metabolism. D. B. Dill, H. T. Edwards and W. H. Forbes, Boston.—p. 118.
Production of the Silent Period by the Synchronization of Discharge of Motor Neurons. H. E. Hoff, E. C. Hoff, P. C. Bucy and J. Pi-Suñer, New Haven, Conn.—p. 123.
Mechanism of Gastric Motor Inhibition from Ingested Carbohydrates. J. P. Quigley and K. R. Phelps, Cleveland.—p. 133.
Economy of Water in Renal Function Referable to Urea. J. L. Gamble, C. F. McKhann, A. M. Butler and E. Tuthill, Boston.—p. 139.
Influence of the Pancreas and the Liver on the Dextrose Tolerance Curve. S. Soskin, M. D. Allweiss and D. J. Cohn, Chicago.—p. 155.
Hydrostatic Factor in Venous Pressure Measurements. Janet H. Clark, D. R. Hooker and L. H. Weed, Baltimore.—p. 166.
Corticofugal Pathways Mediating the "Berührungsreflexe" of Munk and Contact Placing Reactions of Rademaker. C. Marshall, New Haven, Conn.—p. 178.
Inhibition as an Accompaniment of the Knee Jerk. D. B. Lindsley, Boston.—p. 181.

American Journal of Public Health, New York

24: 571-676 (June) 1934

Organization of Adult Groups for Health Education. Mary P. Connolly, Detroit.—p. 571.
Transmission Sequence of Syphilis. W. A. Brumfield Jr. and D. C. Smith, Charlottesville, Va.—p. 576.
Arsenic Poisoning by Pies. C. H. La Wall and J. W. E. Harrisson, Philadelphia.—p. 581.
*Immunization of Humans with Alum Precipitated Tetanus Toxoid. D. H. Bergey and S. Etris, Philadelphia.—p. 582.
Houston Adopts a Cross Connection Idea Worthy of Note. H. N. Old, New Orleans.—p. 586.
Diphtheria Prevention in Charleston, W. Va. H. B. Robins, Charleston, W. Va.—p. 588.
Modern Trends in Public Health Administration. E. L. Bishop, Nashville, Tenn.—p. 591.
Pathogenicity of Certain Species of Monilia. W. D. Stovall and S. B. Pessin, Madison, Wis.—p. 594.
Vitamin G Deficiency. P. L. Day, Little Rock, Ark.—p. 603.
Child's Sleep: Effect of Certain Foods and Beverages on Sleep Motility. G. Giddings, Atlanta, Ga.—p. 609.
Relative Values in Tuberculosis Case Finding Work. H. E. Kleinschmidt, New York.—p. 615.
A Plan to Increase Understanding of the Value of Scientific Medicine. T. J. Edmonds, Des Moines, Iowa.—p. 619.
Rabies Vaccine Protection Tests. J. Reichel and J. E. Schneider, Glenolden, Pa.—p. 625.
Early Diagnosis of Primary Syphilis: Practical Darkfield Examination by Mail. H. E. Elmer, Konigsberg, Germany.—p. 629.
Fevers of Typhoid Group in Members of the Civilian Conservation Corps During 1933. G. F. Lull, Washington, D. C.—p. 631.
Semiautomatic Delivery Pipet. F. E. Daniels, Harrisburg, Pa.—p. 633.
*Scarlet Fever Toxin: Successful Immunizing Agent. O. B. Nesbit and Sue Thompson, Gary, Ind.—p. 634.
High Lights of the Biennial Nurses' Convention, Washington, D. C., April 22-27, 1934. Eva F. MacDougall, Indianapolis.—p. 638.

Immunization with Alum Precipitated Tetanus Toxoid.—The toxoid that Bergey and Etris employed was prepared from a toxin containing 10,000 minimal lethal doses per cubic centimeter. The toxin was detoxified with 0.4 per cent formaldehyde. The toxoid was precipitated with 2 per cent of potash alum, washed twice with and resuspended in physiologic solution of sodium chloride. Merthiolate was added to make a 1:10,000 dilution. The addition of potash alum to toxoid is believed to retard the rate of absorption and thereby appears to increase the antigenic action, so that it might be used in doses of 1 cc. The study of the antigenic effect of a single dose of alum precipitated tetanus toxoid was started on thirty-three adults and on a boy 10 years of age. None of the specimens of normal blood showed the presence of measurable amounts of antitoxin. Immediately after withdrawal of the blood each person received an injection of 1 cc. of the alum precipitated tetanus toxoid by deep subcutaneous injection. The serums of eight of the thirty-four persons that had received the alum precipitated tetanus toxoid from twenty-five to forty-two days earlier were tested for antitoxic content, and four, who were within the age group of from 20 to 30 years, showed from $\frac{1}{1,000}$ to $\frac{3}{1,000}$ unit of antitoxin per cubic centimeter. The other four showed only traces of antitoxin. The four that showed measurable amounts of antitoxin had received the dose of antitoxin only twenty-five days prior to the tests. The serums of two individuals, who were more than 50 years of age, when tested sixty-eight days after treatment with tetanus toxoid showed only a trace of antitoxin. The authors state that since guinea-pigs receiving a dose of 1 cc. of the alum precipitated tetanus toxoid developed as much as one-half unit of antitoxin in 1 cc. of serum in eight weeks, it is believed that human beings after an injection of a dose of 1 cc. will show at least $\frac{1}{250}$ unit of antitoxin in from six to eight months. The development of tetanus antitoxin in the blood of persons is slow and requires several months before appreciable amounts of antitoxin can be detected. Tetanus toxoid should not be used for therapeutic purposes. It should not be injected into a nonimmune person at the time of receiving an injury. Persons actively immunized with tetanus toxoid when injured should receive another dose of tetanus toxoid, while persons who are not actively immunized should receive a dose of tetanus antitoxin. In such an individual active immunization may be carried out by giving a dose of tetanus toxoid about two weeks after the receipt of a dose of tetanus antitoxin, following an injury. The points of special importance in the use of alum precipitated tetanus toxoid are the induction of an active immunity in from three to six months, the absence of either local or general reaction from the dose of alum toxoid except slight local reaction in occasional persons who are highly sensitive to the proteins contained in culture mediums, and the absence of danger of sensitizing the individual to horse serum proteins such as may occur from repeated prophylactic doses of tetanus antitoxin when used for prophylaxis following injuries.

Scarlet Fever Toxin: Successful Immunizing Agent.—After giving 49,165 doses of scarlet fever toxin, 20,278 primary Dick tests and 12,713 Dick retests in the Gary schools, Nesbit and Thompson found that scarlet fever immunization as recommended for use by the scarlet fever committee is a safe procedure and that it is a valuable asset to a community as a prophylactic measure. During the eight years preceding 1925, when the school census varied from 9,811 to 18,438, there were twenty-six deaths from scarlet fever among 1,241 cases reported. In the following eight years, up to the present time, since immunization has been carried on, the school census has varied from 20,472 to 28,032, and there have been 1,147 cases with thirteen deaths. In giving Dick tests it is important that exactly 0.1 cc. of test material is injected intradermally, that the potency of the material is checked and that the tests are read from twenty-two to twenty-four hours later in clear daylight. If there is a question as to whether the test is negative or positive, it should be considered positive. Some severe but no serious reactions have resulted from the 49,165 doses of scarlet fever toxin. Of 114 who began doses, 107 finished, indicating the infrequency of severe reactions to doses. During the past year 2,055 primary Dick tests were given, of which 762, or 35 per cent, were negative. Of 368 who were given the usual five doses and given a Dick retest two weeks later, 788, or 91 per cent, were negative. During the past year 171 persons were retested who had had the usual five doses five or more years previously and 139, or 81 per cent, remained negative. Of the 18,980, the total number of primary Dick tests read during nine years, 46 per cent have been negative. Among a group estimated at 10,000 who have completed scarlet fever toxin doses, there have been only nine persons who had a negative retest who have later been reported with scarlet fever.

American Review of Tuberculosis, New York

30: 1-122 (July) 1934

Incidence of Tuberculous Infection Among Children in New York City: Survey of Fourteen Thousand Six Hundred and Ninety-Nine Children Tuberculin Tested in Hospitals or Attending Clinics, Three-Year Period, 1930-1932. G. J. Drolet, New York.—p. 1.
Lymphatic Reaction in Tuberculosis. B. K. Wiseman and C. A. Doan, Columbus, Ohio.—p. 33.
*Rôle of Atelectasis in Pulmonary Tuberculosis. B. P. Stivelman, New York.—p. 60.
Abdominal Conditions Influencing the Lungs and Pleural Pressure in Pulmonary Tuberculosis. B. Gordon, White Haven, Pa.—p. 72.
Ambulatory Artificial Pneumothorax in the Treatment of Tuberculosis in the Negro. J. W. Cutler, W. H. Rodgers and I. B. Cippes, Philadelphia.—p. 80.
Air Embolism Complicating Artificial Pneumothorax: Case with Autopsy. T. McCurdy, Omaha.—p. 88.
*Tuberculous Bacilluria: Experimental Study with Acid-Fast Bacteria of Low Pathogenicity. L. G. Montgomery and R. B. Allen, Rochester, Minn.—p. 92.
Frequency of Tubercle Bacillemia by Loewenstein's Method. W. F. Petersen and I. H. Lederman, Chicago.—p. 103.
Study of Incidence of Pulmonary Tuberculosis. H. H. Fellows, New York.—p. 109.

Atelectasis in Pulmonary Tuberculosis. — Stivelman states that acute massive atelectasis is rarely observed in pulmonary tuberculosis but that it may occur when a large bronchus is plugged as a result of hemoptysis. Chronic massive atelectasis in phthisis is frequently confused with extensive unilateral pleuropulmonary fibrosis. Cases may run a benign course, but, when dyspnea develops as a result of extensive mediastinal deflection, may be effectively treated with artificial pneumothorax. Confluent lobular atelectasis occurs frequently and early in the course of phthisis. It encourages local fibrosis by producing a local tissue respiratory deficiency. Tubercle bacilli, being strict aerobes, are markedly attenuated when they are deprived of an adequate amount of oxygen. Lobular atelectasis by impairing the local circulation materially diminishes the available oxygen supply in the area involved, and so adversely affects the growth of the tubercle bacilli. All forms of atelectasis are to be seen in lungs treated with artificial pneumothorax. This accounts for the rapid fibrosis of lesions

under collapse therapy. The collapse of cavities in negative-pressure pneumothoraces is brought about by the absorption of the air they contain following the kinking of their draining bronchi. The high negative pressure thus created within them forces an approximation of their walls. When this is accomplished, healing of the cavity may continue uninterruptedly if further collapse is judiciously maintained.

Experimental Tuberculous Bacilluria.—Montgomery and Allen performed a series of experiments for the purpose of demonstrating whether it was possible to bring about passage of acid-fast bacteria through the normal kidney. Guinea-pigs were given intravenous injections of a heavy suspension of Mycobacterium avium, and rabbits were similarly given injections of a heavy suspension of Mycobacterium phlei. The urine of these animals was collected by catheterization and examined microscopically, and cultures were taken by appropriate means for the demonstration of acid-fast bacteria. Cultures of organisms similar to those injected were obtained from the urine of guinea-pigs and one rabbit. Two similar experiments were performed, except that the number of bacteria was doubled in an attempt to obtain more striking results. The results were negative in the case of the rabbits, but 82 per cent of the cultures made from the urine of the guinea-pigs were productive of bacterial growth. A fifth experiment was carried out on guinea-pigs in which the urine was collected by aspiration of the bladder at necropsy. A further change was made by introducing a group of guinea-pigs in which Mycobacterium phlei was used in place of Mycobacterium avium. Positive cultures were not obtained in this experiment. Consequently the positive results of the first experiments were due to contamination of the urine by blood elements that had been liberated through abrasions caused by the introduction of the catheter. The authors conclude that the normal kidney of the rabbit and the guinea-pig is not permeable to the acid-fast organisms used in this investigation, even in the presence of marked and continued bacillemia.

Archives of Internal Medicine, Chicago

54: 1-160 (July) 1934

Medical Social Aspects in Practice. G. R. Minot, Boston.—p. 1.
Etiology of Hodgkin's Disease: II. Skin Reaction to Avian and Human Tuberculin Proteins in Hodgkin's Disease. P. E. Steiner, Chicago.—p. 11.
Chronic Suprarenal Insufficiency. M. Packard and H. F. Wechsler, New York.—p. 18.
*Chronic Arthritis: Serologic and Clinical Studies. Katharine E. Cox and D. F. Hill, Tucson, Ariz.—p. 27.
Action of Diuretic Drugs: I. Action of Diuretics in Normal Persons. H. L. Blumgart, Dorothy Rourke Gilligan, R. C. Levy, M. G. Brown and Marie C. Volk, Boston.—p. 40.
Jerusalem Artichoke in Treatment of Diabetes. L. K. Campbell, Chicago.—p. 82.
Phosphatase Studies: III. Serum Phosphatase in Disease of Bone: Interpretation and Significance. A. Bodansky and H. L. Jaffe, New York.—p. 88.
Further Observations on Effect of Drugs on Induced Cardiac Standstill: Effect of Epinephrine and Related Compounds. M. H. Nathanson, Minneapolis.—p. 111.
Morphologic Varieties of Bronchiectasis in the Adult: Their Probable Pathogenesis and Clinical Differentiation. R. A. Bendove and B. S. Gershwin, New York.—p. 131.
*Osteomalacia: Necropsy Observations in Man. F. D. Gunn and W. H. Nadler, Chicago.—p. 145.

Chronic Arthritis.—According to Cox and Hill, Cecil's hemolytic streptococcus AB 13 shows a greater serologic selectivity for atrophic arthritis than for any other disease group studied, as evidenced by the percentage of positive reactions in high agglutinin titer. The proportion of serums of patients having atrophic arthritis which contain agglutinins in high titer for AB 13 cannot be accounted for on the basis of (1) previous artificial immunization or (2) previous or concomitant streptococcic infections. No other organism employed in this work was as selective as AB 13 for serums from patients with atrophic arthritis either in the height of the serum titer or in the frequency of positive agglutinin reactions. No correlation was found between agglutinin titers and cutaneous reactions to vaccine of homologous organisms in the patients with atrophic arthritis. Often within a short time a striking unexplained variation of agglutinin titers, not accounted for by clinical developments, occurs in patients untreated by vaccine. In this study there was no regularity in the changes in the agglutinin titer as a result of vaccine therapy. There is no apparent relationship between the variation in agglutinin titer and the clinical course. A few patients seemed to be benefited by desensitization with vaccine. The improvement in other patients who received vaccine therapy may have been due to other factors impossible to control. The AB 13 agglutinin titer has a definite but limited use as a diagnostic aid in arthritis.

Necropsy Observations in Osteomalacia.—Gunn and Nadler present the observations of necropsy in a typical case of osteomalacia in a man. Besides the typical skeletal deformities, the pathologic changes of special interest were hypertrophy and hyperplasia of the parathyroids, slight hypertrophy of the anterior lobe of the hypophysis and numerous small calcareous deposits in the kidneys. Only two parathyroids could be found. These were equally enlarged and presented microscopic evidence of mild hyperplasia interpreted as a compensatory condition caused by increased physiologic activity.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

15: 321-384 (June) 1934

*Grenz Ray Therapy in Dermatology. M. Dorne and E. P. Zeisler, Chicago.—p. 325.
Management of Neoplastic Lesions of Accessory Sinuses and the Orbit. W. L. Clark, Philadelphia.—p. 333.
Malignant Epithelioma of the Neck. E. N. Kime, Indianapolis.—p. 339.
Malignancy About the Head: Radiation or Electrosurgery? T. C. Galloway, Evanston, Ill.—p. 343.
Cancer of the Tongue. W. H. Schmidt, Philadelphia.—p. 346.
New Type of Water Cooled Quartz Ultraviolet Applicator for Orificial Use. C. W. Symonds, Pasadena, Calif.—p. 352.
Paraffin Treatment of Chronic Arthritis, with Especial Reference to Improved Type of Equipment. B. L. Wyatt, Tucson, Ariz.—p. 353.
Ultra Short Wavelength Roentgen Rays: Problems in Therapeutic Use. H. Schmitz and H. E. Schmitz, Chicago.—p. 356.
Physical Measurements of Ultraviolet Radiation. C. E. Greider, Cleveland.—p. 360.
Balneotherapy in Circulatory Disorders. W. S. McClellan, Saratoga Springs, N. Y.—p. 366.

Borderline Ray Therapy in Dermatology.—Dorne and Zeisler found borderline rays superior to x-rays in certain superficial mycotic infections, in localized and disseminated neurodermatitis and in lichenified eczemas. They are also of value in superficial basal cell epitheliomas, especially of the eyelid, in nevus flammeus, in some keratoses and occasionally in senile warts. In a miscellaneous variety of other inflammatory dermatoses the effect of borderline rays is probably equal to that of roentgen rays. In many of the commoner dermatoses occurring about the face, such as acne vulgaris, rosacea, seborrhea and sycosis, the therapeutic effect of the borderline ray is unsatisfactory and it is not considered the method of choice. Conservatism in dosage is recommended. On the basis of their observations the authors do not feel justified in concluding that borderline rays will supplant x-rays in dermatology.

Colorado Medicine, Denver

31: 221-258 (July) 1934

Tuberculin Test: Its Value and Limitations in Diagnosis of Childhood Tuberculosis. H. J. Corper, Denver.—p. 225.
Cardiovascular Observations in Two Hundred and Fifteen Neurosyphilitics. C. T. Burnett and C. A. Rymer, Denver.—p. 230.
Coronary Thrombosis: "Acute Indigestion" of Coronary Thrombosis and Electrocardiograph. M. Katzman, Denver.—p. 233.
Surgical Treatment of Adhesive Pericarditis: Report of Case. J. M. Foster Jr. and D. Prey, Denver.—p. 244.

Illinois Medical Journal, Chicago

66: 1-100 (July) 1934

Medical Economics: Philadelphia Plan: Results Accomplished: Medical Relief Under F. E. R. A. and C. W. A. F. A. Faught, Philadelphia.—p. 67.
Bacteriologic Investigation of Arthritic and Preparation of an Autogenous Vaccine. L. J. Murphy, Chicago.—p. 77.
Bleeding from the Bowel. P. W. Brown, Rochester, Minn.—p. 79.
Spinal Anesthesia: Experimental Study. A. M. Winograd and H. H. Rosenbloom, Chicago.—p. 82.
Recticular Cell Sarcoma of Kidney: Case Report. R. F. Elmer and C. E. Boylan, Chicago.—p. 83.
Action of Dekamethylendiguanidine-Bitartrate on Blood Sugar. B. L. Monias, Chicago.—p. 87.
Blood Calcium: Laboratory Study of Relationship Between Total Calcium, Diffusible Calcium and Inorganic Phosphorus. A. A. Janson, Evanston.—p. 91.
Removal of Huge Bladder Stone Under Spinal (Neocaine) Anesthesia with Recovery. A. F. Barnett, Menard.—p. 95.

Journal of Clinical Investigation, New York

13: 517-724 (July) 1934

Passage of Native Proteins Through the Normal Gastro-Intestinal Wall. B. Ratner and H. L. Gruehl, New York.—p. 517.

*Studies in Congestive Heart Failure: XXII. Method for Obtaining "Mixed" Venous Blood by Arterial Puncture. B. Friedman, G. Clark and T. R. Harrison, Nashville, Tenn.—p. 533.

*Relationship Between Blood Cholesterol and Increased Metabolism from Dinitrophenol and Thyroid. W. C. Cutting, D. A. Rytand and M. L. Tainter, San Francisco.—p. 547.

Physiologic Disturbances During Experimental Diphtheritic Intoxication: IV. Blood Electrolyte and Hemoglobin Concentrations. D. C. Darrow, H. Yannet and M. Katharine Cary, New Haven, Conn.—p. 553.

Studies of the Heart and Circulation in Disease: Estimations of Basal Cardiac Output, Metabolism, Heart Size and Blood Pressure in Two Hundred and Thirty-Five Subjects. I. Starr Jr., J. S. Donal, A. Margolies, R. Shaw, L. H. Collins and C. J. Gamble, Philadelphia. —p. 561.

Radiation of Heat from the Human Body. I. Instrument for Measuring Radiation and Surface Temperature of the Skin. J. D. Hardy, New York.—p. 593.

Id.: II. Comparison of Some Methods of Measurement. J. D. Hardy, New York.—p. 605.

Id.: III. The Human Skin and a Black-Body Radiator. J. D. Hardy, New York.—p. 615.

Relation of Circulating Antipneumococcic Immune Substances to the Course of Lobar Pneumonia: I. Natural Immune Substances. O. H. Robertson, J. B. Graeser, L. T. Coggeshall and M. Agnes Harrison, Chicago.—p. 621.

Id.: II. Acquired Immune Substances. O. H. Robertson, J. B. Graeser, L. T. Coggeshall and M. Agnes Harrison, Chicago.—p. 633.

Id.: III. Injected Immune Substances (Antipneumococcus Serum Types I and II). O. H. Robertson, J. B. Graeser, L. T. Coggeshall, Chicago, and R. H. P. Sia, Peiping, China.—p. 649.

Relation of Variations in Mean Corpuscular Volume to Number of Reticulocytes in Pernicious Anemia: Significance of Increased Bone Marrow Activity in Determining the Mean Size of Red Corpuscles. M. M. Wintrobe, Baltimore.—p. 669.

*Diagnostic Importance of the Heterophile Antibody Test in Leukemia. A. Bernstein, Baltimore.—p. 677.

Method for Obtaining Mixed Venous Blood by Arterial Puncture.—Friedman and his associates describe a modification of the method of Burwell and Robinson for determining the gas contents of "mixed" venous blood. The procedure depends on obtaining blood from a peripheral artery while the subject breathes a gas mixture which has been equilibrated with his venous blood by previous repeated rebreathings. The several procedures involved in the method have been checked by various experiments. Application of the method to dogs has demonstrated that the values found for the blood gases by this indirect method are in close agreement with the gas contents of blood obtained by puncture of the right ventricle. The presence in the lungs of sufficient fluid to produce well marked arterial anoxemia does not invalidate the results. The method involves considerable discomfort to the subject. Its agreement with the modified acetylene procedure constitutes additional evidence as to the validity of the latter in subjects with cardiac disease.

Blood Cholesterol and Increased Metabolism from Dinitrophenol and Thyroid.—Cutting and his co-workers establish a significant correlation between the basal metabolic rate and the blood cholesterol concentration for human subjects. This correlation was not present when the metabolism was raised by dinitrophenol. Therefore the changes in blood cholesterol present in thyroid disease are not related directly to the metabolic rate but to other actions of thyroid secretion. The stimulation of metabolism by dinitrophenol was as great in patients with initial metabolic rates below 15 per cent as it was in those with higher rates, which indicates that the drug may increase depressed as well as normal metabolism.

Heterophile Antibody Test in Leukemia.—Bernstein found that heterophile agglutinins in the blood serums of twenty-one patients having leukemia were confined to low titers: less than 1 to 4 in twenty instances. In most of the conditions simulating leukemia, heterophile agglutinins were found over a wider distribution of titers up to 1 to 16. The author presents two clinical histories as examples of instances in which this differential point was of assistance in arriving at a diagnosis. Intravenous administration of horse serum, which in a normal person elicits an increase in the concentration of heterophile antibodies, failed in one case of lymphoid leukemia to raise the heterophile antibody titer. In a second case of probable leukosarcoma, horse serum brought about a minimal increase of sheep cell agglutinins. Neither of these patients developed serum disease. The restriction of heterophile antibody concentrations in leukemia to low titers is in accord with previously known immunologic characteristics of persons having the disease.

Journal of Immunology, Baltimore

26: 437-522 (June) 1934

Inheritance of Diphtheria Immunity in Ducks. D. T. Fraser, T. H. Jukes, H. D. Branion and K. C. Halpern, Toronto.—p. 437.

Sensitization of Bacteria with Normal and Immune Human Serum. S. Mudd, Philadelphia.—p. 447.

Relation of Serum Protein Fractions to Serum Sickness in Rabbits. L. Jones and M. S. Fleisher, St. Louis.—p. 455.

Existence of Antigenic Determinants of Diverse Specificity in a Single Protein: II. In Two Natural Proteins; Crystalline Duck Egg Albumin and Crystalline Hen Egg Albumin. S. B. Hooker and W. C. Boyd, Boston.—p. 469.

Absorption Spectra of the Carbohydrates of the Pneumococcus: Preliminary Note. A. Wadsworth, M. O'L. Crowe and L. A. Smith, Albany, N. Y.—p. 481.

Group Specificity of Dried Muscle and Saliva. W. C. Boyd and L. G. Boyd, Boston.—p. 489.

Reaction Between Crystalline Urease and Antiurease. J. S. Kirk and J. B. Sumner, Ithaca, N. Y.—p. 495.

*Concerning Vaccination of Monkeys Against Acute Anterior Poliomyelitis, with Especial Reference to Oral Immunization. J. A. Kolmer and Anna M. Rule, Philadelphia.—p. 505.

Vaccination Against Acute Anterior Poliomyelitis.—Kolmer and Rule found that a chloroform treated vaccine of monkey poliomyelitic spinal cord in a total dosage of 1 cc. by subcutaneous and intracutaneous injection failed to immunize two monkeys against intracerebral inoculations of virus. A sodium ricinoleated vaccine appeared to produce slight immunity in one monkey by subcutaneous injection, while intracutaneous injections immunized two additional animals in a more convincing manner. An untreated vaccine by intracutaneous injection immunized one animal successfully but failed to protect two animals when administered by stomach tube. A heated vaccine failed to immunize five monkeys when administered subcutaneously, intracutaneously and by stomach tube.

Journal of Pharmacology & Exper. Therap., Baltimore

51: 263-370 (July) 1934

Proof of Existence of a Follicle Stimulating and Luteinizing Hormone in Anterior Lobe of Pituitary Body. Zonja Wallen-Lawrence, Chicago.—p. 263.

*Cardiac Irregularities Produced by Ephedrine and Protective Action of Sodium Barbital. W. J. Meek and M. H. Seevers, Madison, Wis.—p. 287.

Action of Morphine Papaverine, Atropine, Pilocarpine, Pituitrin, Pitocin and Pitressin on Intestinal Propulsive Activity Determined in Unanesthetized Dog by Bolus Method. J. P. Quigley, W. H. Highstone and A. C. Ivy, Cleveland.—p. 308.

Pigeon Emesis and Drug Action. C. C. Lieb and M. G. Mulinos, New York.—p. 321.

Respiratory Effects of Morphine, Codeine and Related Substances. I. Effect of Codeine, Isocodeine, Allopseudocodeine and Pseudocodeine on Respiration of Rabbit. C. I. Wright, Ann Arbor, Mich.—p. 327.

Id.: II. Effect of Dihydrocodeine, Dihydroisocodeine, Dihydroallopseudocodeine and Dihydropseudocodeine. C. I. Wright, Ann Arbor, Mich.—p. 343.

*Histologic Study of Action of Estrin in Terminating Pregnancy. F. E. D'Amour and R. G. Gustavson, Denver.—p. 353.

Use of Pigeons in Estimation of Digitalis Potency. H. B. Haag and J. D. Woodley, Richmond, Va.—p. 360.

Cardiac Irregularities Produced by Ephedrine.—Meek and Seevers recorded the effect of ephedrine on cardiac rhythm by the electrocardiograph after intravenous injection of the drug into intact dogs. Doses of from 0.5 to 8 mg. per kilogram of weight produce almost at once a stage of marked bradycardia. This more or less quickly merges into a second stage characterized by ectopic extrasystoles and slow ectopic rhythms. These two stages are believed to be largely the result of reflex vagal stimulation from the high blood pressure. The first is a direct inhibition of the normal pacemaker. The second consists of escape phenomena from the lower automatic centers. Coincident with the escape phenomena there is developing a third stage of excitation. This is shown by the slow rhythms occasionally passing into tachycardias. If ephedrine is given after atropine the reflex effects are eliminated and the stage of stimulation is reached almost at once, tachycardias being observed in almost every experiment. Ephedrine also affects cardiac conduction. In the second stage there are various types of block due to reflex vagal stimulation. In the third stage of excitation, bundle-branch block and disturbed ventricular

conduction are probably caused by the opening up of abnormal pathways. Doses of from 6 to 20 mg. of ephedrine per kilogram of weight begin to show a fourth stage of depression. As the amount injected is raised above 20 mg., paralysis of the upper automatic centers begins to occur and the ventricle may pass into fibrillation. After from 125 to 200 mg. of sodium barbital per kilogram of weight there is a high degree of protection against the cardiac effects of ephedrine. Since barbital somewhat increases the normal heart rate but slows it after atropine, it is believed the protection is brought about by a certain degree of vagal paralysis and a simultaneous depression of the automatic centers.

Action of Estrin in Terminating Pregnancy.—The histologic study of D'Amour and Gustavson of the action of estrin administration during the course of pregnancy indicates that: 1. In preimplantation stages, the uterus, when exposed to an adequate dose of estrin, has a hyperplastic mucous membrane, considerably fibrosed, and the secretion in its lumen has practically no coagulable material in it, resembling rather the secretion that dilates the uterus at estrus. 2. Pregnancy in postimplantation stages is terminated by killing the embryo, without necessarily involving any morphologic changes except the absence of the characteristic edema of pregnancy.

Journal of Urology, Baltimore

32: 1-130 (July) 1934

Renal Tuberculosis as a Local Manifestation of General Tuberculosis. H. G. Bugbee, New York.—p. 1.
*Roentgenologic Diagnosis of Perinephric Abscess. J. H. Shane and M. Harris, Rochester, Minn.—p. 19.
Nephrectomy for Malignant Disease of Kidney: Suppression of Urine and Death Following Massive Doses of X-Rays. F. R. Hagner and S. R. Coleman, Washington, D. C.—p. 27.
Consideration of Development of Polycystic Kidney. C. M. McKenna and O. F. Kampmeier, Chicago.—p. 37.
Occurrence of Metastatic Malignant Disease of Kidney. J. D. Barney and E. R. Mintz, Boston.—p. 45.
Adjustable Renal Forceps. B. E. Fillis, Hubbard Woods, Ill.—p. 53.
Intravenous Urography in Infants and Children: Observations in Three Hundred and Four Cases. Meredith F. Campbell, New York.—p. 55.
Sarcoma of the Prostate: Report of Two Cases. J. B. Gilbert, Schenectady, N. Y.—p. 63.
Lymphosarcoma of the Prostate: Case Report. D. L. Dial, Lancaster, Pa.—p. 79.
An Operating Dilatocysto-Urethroscope for Use in Female Urethra. R. L. Dourmashkin, New York.—p. 85.
Large Uretheral Calculi: Case Report. W. N. Taylor, Columbus, Ohio.—p. 93.
Fibrosarcoma of Male Urethra. O. T. Bailey, Albany, N. Y.—p. 103.
Urinary Reabsorption from the Urinary Tract of Alkaline Fed Rats. F. Fuchs, Vienna.—p. 115.
Primary Myxoma of Scrotum. J. G. Menville, New York.—p. 125.

Roentgenologic Diagnosis of Perinephric Abscess.—Shane and Harris conclude that the roentgenographic signs of perinephric abscess must be considered as a valuable adjunct in the diagnosis. The shadow of the psoas muscle was obliterated to some extent in all cases: some abnormality of the renal shadow was found in thirty-three cases, scoliosis was observed in eighteen cases and elevation of the diaphragm was found in eight of the thirty-two cases in which roentgenologic examination of the thorax was performed. In twenty-two cases an associated pathologic condition was found at operation, stones being present in seventeen. The frequency with which obliteration of the shadow of the psoas muscle occurs on one or both sides, and the frequency with which some degree of scoliosis is found in the course of routine roentgenography, diminish to some extent the clinical value of these data. For instance, the shadow of the psoas muscle was obliterated on one side in 10 per cent of cases and on both sides in 3 per cent. Definite scoliosis was present in 3 per cent, but there were several other films in which it occurred. The roentgenograms were studied in a series of fifty cases of renal calculi, and obliteration of the psoas muscle, or scoliosis, was found to some extent in more than 30 per cent of these cases. The roentgenologic signs of perinephric abscess, especially obliteration of the shadow of the psoas muscle or scoliosis, do not necessarily indicate the existence of perinephric abscess and therefore cannot be regarded as pathognomonic. They have a relative importance, however, when considered in conjunction with the clinical manifestations of the disease, that is increased when coincident scoliosis and obliteration of the psoas muscle are observed.

Medical Annals of District of Columbia, Washington

3: 185-210 (July) 1934

Diagnosis and Treatment of Female Sterility. J. Kotz, Washington.—p. 185.
Peripheral Neuritis. W. Freeman, Washington.—p. 190.
*Treatment of Urinary Infections by Ketogenic Diet. W. D. Goodman, Washington.—p. 195.
Septic Abortion, Complicated by Bilateral Lobar Pneumonia, Retroperitoneal Abscess and Femoral Thrombophlebitis: Report of Case with Recovery. H. Hertzberg, Washington.—p. 198.

Treatment of Urinary Infections by Ketogenic Diet.—Goodman points out that the ketogenic diet is indicated in initial or recurrent acute pyelonephritis or cystitis without acute obstruction, chronic urinary infection without demonstrable gross pathologic changes, chronic urinary infection associated with pathologic change demonstrable by roentgenography, urography or cystoscopy, urinary infection following operations, preliminary preparation for certain urologic operations, urinary infection following instrumentation such as the passing of catheters, sounds or cystoscopes and in urinary infection following gonorrhea, in the presence of inoperable neoplasms and in the presence of anomalies. The author obtained satisfactory results in twenty-two of thirty patients receiving the diet, five of which were outstanding cures: (1) chronic pyelonephritis, cystitis and prostatitis, (2) polycystic kidneys, (3) cystitis, prostatitis and chronic epididymitis, (4) chronic gonorrhea with prostatitis and (5) prostatitis with residual urine of 180 cc. Local treatments must be given for foci of infection. Vitamins are added to prevent metabolic disturbances. Should ketosis be too severe, alkalis and a small amount of orange juice or tomato juice should be given. Thin, cadaveric patients do not tolerate the diet. Patients on the diet lose from 4 to 10 pounds (1.8 to 4.5 Kg.).

Nebraska State Medical Journal, Lincoln

19: 241-280 (July) 1934

Status of Irradiation in Living Tissue. E. W. Rowe, Lincoln.—p. 241.
Traumatic Neurosis. G. Neuhaus, Omaha.—p. 248.
Classification of Anemias. E. B. Reed, Lincoln.—p. 253.
Fibromyomas of the Vaginal Wall. A. F. Tyler, Omaha.—p. 257.
Tumor of the Pineal Body: Case Report. L. Ragan, Seward.—p. 258.

New England Journal of Medicine, Boston

210: 1355-1406 (June 28) 1934

*Treatment of Hydrocephalus by Endoscopic Coagulation of the Choroid Plexus: Description of New Instrument and Preliminary Report of Results. T. J. Putnam, Boston.—p. 1373.
Acute Pancreatic Necrosis in Acute and Chronic Alcoholism. W. K. Myers and C. S. Keefer, Boston.—p. 1376.
Arsenic Poisoning. J. G. Downing, Boston.—p. 1380.
Malpractice Suits, Their Cause and Prevention. H. G. Stetson and J. E. Moran, Greenfield, Mass.—p. 1381.
Backward Displacement After Ankle Fracture: Corrective Operations. F. J. Cotton and G. M. Morrison, Boston.—p. 1386.

Treatment of Hydrocephalus by Endoscopic Coagulation of the Choroid Plexus.—Putnam describes an endoscopic instrument with which it is possible to destroy the choroid plexuses within the lateral ventricles by means of electrical coagulation without removal of spinal fluid. He employed the procedure in seven cases of communicating hydrocephalus in infants and one of meningocele without hydrocephalus, relieving the bulging of the fontanels and decreasing the diameter of the head in all cases except one. There have been two deaths, which were due to intercurrent diseases and possibly are not to be attributed to the operation. The intracranial pressure was relieved up to the time of death in the two fatal cases.

211: 1-48 (July 5) 1934

Menace of Diabetic Gangrene. E. P. Joslin, Boston.—p. 16.
Liver Abscess: Review of Eighty-Five Cases. C. S. Keefer, Boston.—p. 21.
*Endometrioma of Bartholin's Gland. C. J. Duncan, Boston.—p. 24.
Certain Factors Influencing the Mortality of Sanatorium Treated Cases of Pulmonary Tuberculosis. A. D. Langmuir, New York; S. L. Williams, Montreal, and A. S. Pope, Boston.—p. 26.
Uterine Bleeding from a Needle in Uterine Cervix. H. F. Day, Boston.—p. 29.
Fibula Resection in Certain Ankle Deformities. F. J. Cotton and G. M. Morrison, Boston.—p. 31.

Endometrioma of Bartholin's Gland.—Duncan presents what he believes to be the first case of endometrioma of the gland of Bartholin. The patient complained of a hard, painful mass on the left side of the vulva, which had been troublesome for the past year and a half. The pain became worse

periodically at the time of each menstruation and decreased after the flow stopped. Four years before the present admission she had an acute inflammation of the gland of Bartholin, at which time the gland was incised and drained. The day following operation she began to menstruate. On examination a firm bluish nodule, 2 cm. in diameter, was found at the site of the left gland. The nodule was not tender and could be moved about freely in the tissues of the labium. A diagnosis of endometriosis was made. The tumor was removed and on section presented the typical picture of endometriosis, photomicrographically. It seems tenable that following the incision and drainage menstrual blood containing living endometrial cells penetrated the site of the gland and produced the tumor.

New Orleans Medical and Surgical Journal

87: 1-72 (July) 1934

Prevention of Cancer. J. A. Lanford, New Orleans.—p. 1.
Neglected Conditions of the Eye, Ear, Nose and Throat. H. L. Arnold, Meridian, Miss.—p. 4.
Hoarseness: Its Significance: Motion Picture Demonstration. F. E. LeJeune, New Orleans.—p. 5.
Some Menstrual Problems of the Growing Girl. L. A. LeDoux, New Orleans.—p. 9.
Epilepsy and Its Treatment. C. S. Holbrook, New Orleans.—p. 13.
Physiologic Preventive Medicine. A. Eustis, New Orleans.—p. 17.
*Complete Prolapsed Rectum Treated by Office Method. J. W. Warren, New Orleans.—p. 19.
Etiology and Pathology of Appendicitis. A. V. Friedrichs, New Orleans.—p. 20.
Acute Appendicitis Between the Extremes of Life with Analysis of Nine Hundred and Ten Cases. U. Maes, F. F. Boyce and Elizabeth M. McFetridge, New Orleans.—p. 24.
Cecostomy in Treatment of Ruptured Appendix and Peritonitis. C. W. Mattingly, New Orleans.—p. 31.
Conservative Treatment of Appendiceal Peritonitis. A. Ochsner, New Orleans.—p. 32.
Breast Tumors as Related to the Anterior Pituitary Gland. A. L. Culpepper, New Orleans.—p. 39.

Treatment of Prolapsed Rectum.—Warren presents two cases of complete prolapse of the rectum in children, in which there has been no recurrence in three years. The following technic was used: Beginning at the apex of the protrusion a dental needle is plunged through the mucosa into the muscular coat of the protrusion and an injection of 4 or 5 minims (0.25 or 0.3 cc.) of a solution of 4 per cent quinine and urea in 0.5 per cent solution of procaine hydrochloride is made. The needle is withdrawn, moved to the right half an inch, inserted again and the injection is made. This is repeated at one-half inch intervals until a complete circle has been made. Then one-half inch away a new circle is started, the punctures staggered so that they will not be in a straight line. The circles of punctures are continued at one-half inch spaces until the anal margin has been reached. With the patient in the knee-chest posture, the mass is replaced. A heavy gauze pack is placed in the rectum, 8 or 10 inches of a 3 or 4 inch gauze bandage, being used, with 1 or 2 inches of gauze protruding from the rectum to facilitate removal. The patient is then given one-fourth grain (0.016 Gm.) of morphine and put to bed for from twenty-four to thirty-six hours and given a liquid diet. At the end of that time an ounce of petrolatum is injected into the rectum with a glaseptic syringe and by gentle traction the gauze can be removed with almost no inconvenience to the patient. Nothing more is needed except to keep the patient in bed another twenty-four hours, on a liquid diet.

Northwest Medicine, Seattle

33: 225-262 (July) 1934

Ulcer in Different Situations Within the Stomach: Clinical Study. A. B. Rivers, Rochester, Minn., and J. M. Bowers, Seattle.—p. 225.
Postoperative Peptic Ulcers. M. E. Steinberg, Portland, Ore.—p. 231.
*Value of Methylene Blue as an Aid in Localization of Perforated Peptic Ulcers. O. M. Nisbet, Portland, Ore.—p. 238.
Surgical Progress in 1933. R. D. Forbes, Seattle.—p. 239.
Enlargement of Spleen: Diagnosis of Conditions Presenting. S. P. Lucia, San Francisco.—p. 244.
*Peptone Broth in Treatment of Ruptured Appendix with Peritonitis. H. Feagles, Chehalis, Wash.; C. G. Bain, Centralia, Wash., and May E. Gregg, Chehalis, Wash.—p. 249.
Diphtheria in Oregon. F. D. Stricker, Portland, Ore.—p. 250.
Brain Tumors: Diagnosis and Operability. A. W. Adson, Rochester, Minn.—p. 254.

Methylene Blue in Localization of Perforated Peptic Ulcers.—Nisbet recommends methylene blue in abdominal emergencies in which a perforated peptic ulcer is suspected. The operating time is definitely shortened. There should be less manipulation of the viscera if the distribution of the dye is observed. The dye is of definite value in a differential diagnosis. The diameter of the perforation is easily determined and, when the perforation is sealed by a plastic exudate, the stain shows the site of the original lesion and also whether or not further plastic surgery is required. During the last five years the author has had seventeen cases of perforation. In some the diagnosis was obscured by the inability of the patient to give an accurate history.

Peptone Broth in Treatment of Ruptured Appendix.—Feagles and his associates have used isotonic peptone broth in the treatment of eight cases of ruptured appendix with peritonitis and one case of amputation, with apparent benefit. At present their procedure is to pour in about 100 cc. of the broth before inserting a fenestrated split rubber tube drain and closing. On each subsequent day from 5 to 10 cc. of the broth is injected into the drainage tube. The pus is examined at the time of operation and every day thereafter for organisms. The organisms disappeared from the discharge on the fourth to the sixth day. The temperature and the pulse were down to normal on the third to the fifth day. The drainage tube was shortened and out as a rule by the fifth day. Hospitalization time was much reduced and apparently complications were less frequent.

Rhode Island Medical Journal, Providence

17: 107-124 (July) 1934

Present Crisis in Medicine. C. S. Christie, West Warwick.—p. 107.
Complete Heart Block in Young People. C. B. Leech, Providence.—p. 112.

Southern Medical Journal, Birmingham, Ala.

27: 569-666 (July) 1934. Partial Index

Roentgen-Ray Studies of Mediastinal Tumors. C. H. Peterson, Roanoke, Va.—p. 569.
Multiple Polyps of the Colon. F. W. Rankin, Lexington, Ky.—p. 574.
*Intrathoracic Changes in Tularemia. A. Blumberg and R. L. Russell, Oteen, N. C.—p. 578.
Osteomyelitis. W. H. Goodwin, University, Va.—p. 583.
Treatment of Prostatic Cancer. W. C. Stirling, Washington, D. C.—p. 590.
Krukenberg Tumor of the Ovary: Report of Three Cases. C. J. Andrews, Norfolk, Va.—p. 597.
Use of Gold Sodium Thiosulphate in Treatment of Lupus Erythematosus. H. King and C. M. Hamilton, Nashville, Tenn.—p. 604.
Concentrated Feedings in Nutrition of Premature Infants. C. H. Webb, Shreveport, La.—p. 608.
Management of Intracranial Birth Injuries. W. O. Ott, Fort Worth, Texas.—p. 613.
Management of Occipitoposterior Positions, with Especial Reference to the Scanzoni Maneuver. J. W. Reddoch, New Orleans.—p. 615.
*Amaurosis Following Topical Application of Ethyl Hydrocupreine in Acute Septic Sore Throat. E. W. Griffey, Houston, Texas.—p. 623.
Upper Respiratory Tuberculous Complications of Pulmonary Tuberculosis. G. H. B. Terry, Oteen, N. C.—p. 626.
Gastro-Intestinal Allergy: II. Concerning the Mimicry of the Peptic Ulcer Syndrome by the Symptoms of Food Allergy. H. J. Rinkel, Kansas City, Mo.—p. 630.
Myoma of Fundus Uteri. R. A. Nichols Jr., Richmond, Va.—p. 633.
Experimental Production of Gastric Ulcers in the Albino Rat as Result of Vitamin G Deficiency; also as Result of the Specific Influence of Vitamin B Deficiency: Preliminary Report. B. Sure and H. S. Thatcher, Little Rock, Ark.—p. 634.

Intrathoracic Changes in Tularemia.—Blumberg and Russell point out that clinical, roentgenologic and gross pathologic changes within the thorax in tularemia may be those of increase in hilus and bronchial lymph nodes, exudation, pneumonic consolidation, abscess formation, cavitation, vascular changes, necrosis, thickening of bronchial trunks, fibrosis and pleurisy with or without effusion. The microscopic observations are those of vascular changes, necrosis, and proliferation of fibrous tissue. Endothelial cells and mononuclear and polymorphonuclear leukocytes are seen. The Langhans type of cell is usually absent in the pulmonary lesions but can be found in the affected bronchial lymph nodes. Unexplained pulmonary and pleuritic conditions should always be investigated, as they may be tularemic in origin. Patients presenting intrathoracic complications may recover unless the condition has advanced too far. In order to avoid any hazard to the patient and that intrathoracic complications may be recognized early, a roentgenogram should be taken of every patient having tularemia.

Amaurosis Following Application of Ethylhydrocupreine.—Griffey states that those who prescribe ethylhydrocupreine should be familiar with its dangers to the visual

pathways. The toxic action is due to a spasm of the retinal vessels, causing ischemia of the retina. Degenerative changes occur in the ganglion cell layers of the retina and, if severe, lead to ascending atrophy of the optic nerve fibers. Depending on the severity of the reaction the final visual results grade from complete recovery, through relative or absolute scotomas and constricted visual fields, to complete and permanent amaurosis. The toxic action of the drug on the visual apparatus may be due to drug idiosyncrasy in a susceptible person or to faulty elimination in one who is nonsusceptible. The author reports a case of complete amaurosis in a patient having damaged kidneys, who received not more than 8 grains (0.5 Gm.) of the drug by topical application to the pharyngeal mucosa.

Surgery, Gynecology and Obstetrics, Chicago

59: 1-148 (July) 1934

Picture of Very Early Carcinoma of Uterine Cervix. G. V. S. Smith and F. A. Pemberton, Brookline, Mass.—p. 1.
Clinical Manifestations of the Chromaffin Cell Tumors Arising from the Suprarenal Medulla: Suprarenal Sympathetic Syndrome. A. E. Belt, Los Angeles, and T. O. Powell, San Francisco.—p. 9.
Acute Osteomyelitis: Clinical and Experimental Study. K. O. Haldeman, San Francisco.—p. 25.
Single Pyogenic Liver Abscess: Study of Twenty-Four Cases. R. E. Rothenberg and W. Linder, Brooklyn.—p. 31.
Thyroid Crisis. R. H. Bayley, Ann Arbor, Mich.—p. 41.
Present Status of Blood Examination in Diagnosis of Surgical Infections: Study of Twenty-Seven Indexes of Infection Reported in the Literature. H. N. Harkins, Chicago.—p. 48.
*Effect of Gamma-Ray of Radium on Wound Healing. I. T. Nathanson, Chicago.—p. 62.
Dental Prosthesis in Relation to Facial Reparative Surgery. V. H. Kazanjian, Boston.—p. 70.
Irradiation of Parathyroids in Generalized Osteitis Fibrosis Cystica: Report of Case. M. Cutler and S. E. Owen, Chicago.—p. 81.
Juxta-Articular Partial Tibial Osteotomy. H. Milch, New York.—p. 87.
*Preoperative Preparation of Dilated Stomach. T. G. Orr and W. C. Curphey, Kansas City, Kan.—p. 92.
Spinal Anesthesia in Fact and Fancy. W. W. Babcock, Philadelphia.—p. 94.
Simple Method of Performing External Perineal Urethrotomy: Report of Its Value After Fifteen Years. J. D. Barney, Boston.—p. 100.
Narrow Bispinous Diameter and Persistent Occipitoposterior Position. S. Hanson, Stockton, Calif.—p. 102.
Placenta Praevia. E. F. Daily, Chicago.—p. 106.

Effect of Gamma-Ray of Radium on Wound Healing.—Nathanson treated wounds produced in fifteen dogs with varying dosages of the gamma-ray of radium at different time intervals with fixed distance and filtration to ascertain the effects of this type of radiation on the healing process. Acceleration of healing was observed in those wounds which were exposed to small and moderate doses immediately after incision. Retardation was noted in those wounds receiving higher doses. Retardation of healing was noted in all wounds exposed to any dose of radiation twenty-four hours after incision, the degree varying directly with the dose. When the wounds were subjected to varying doses forty-eight hours after incision, retardation effects were noted by the use of the higher doses and no change was seen with the smaller doses. The retardation in healing did not interfere with the formation of a smooth scar.

Preoperative Preparation of the Dilated Stomach.—Orr and Curphey restore a markedly dilated stomach to normal size in an average of from four to six days by using the continuous gastric lavage with suction. An indwelling Levine tube passed through the nose is suitable for this purpose. At the beginning of such treatment it may be necessary to lavage the stomach through a large tube to remove particles of food and mucus too large to pass through a Levine tube. With the nasal tube in place, the patient is urged to drink as much water as possible. All water, secretions and gas are promptly removed from the stomach by continuous suction. After a few hours of lavage, liquid will frequently begin to pass through a previously completely obstructed pylorus. This may be demonstrated by the administration of a small quantity of barium sulphate. Careful attention must be given to the maintenance of chemical, water and metabolic balance. A study of the blood chemistry may indicate the need of sodium chloride. Water, salt and dextrose should be given by vein or hypodermoclysis. Since a loss of the gastric juice reduces the body chlorides, a daily check of the blood chloride content is advisable.

United States Naval Med. Bulletin, Washington, D. C.

32: 257-380 (July) 1934

Peace Time Activities of the Medical Department of the United States Navy. P. S. Rossiter.—p. 257.
*Method for Culturing Anaerobes and Bacteria Requiring Carbon Dioxide Tension. P. F. Dickens.—p. 267.
The Importance of the Chancre in the History of Medicine. C. S. Butler.—p. 270.
Measurement of the Speed of Adjustment of the Eye to Near and Far Vision. C. J. Robertson.—p. 275.
A Naval Medical Officer with the Civilian Conservation Corps. W. T. Buddington.—p. 283.
Efficiency of Carboxide Gas as an Insecticidal Fumigant for Naval and Merchant Vessels. E. W. Brown.—p. 294.
Nutrition in Relation to Dental Disease. H. E. Harvey.—p. 318.
Malignant Neutropenia: Case Reports. J. M. McCants.—p. 322.
Injuries of the Head and Spine. K. E. Lowman.—p. 330.
Malarial Relapse After Atabrine. J. Love.—p. 335.

Culturing Bacteria Requiring Carbon Dioxide Tension.—Dickens points out that in 1932 the United States Naval Medical School began investigations of the cause of accidents in the navy incident to personnel entering compartments that had been closed for a long time. The investigation was started with the knowledge that paints drying by oxidation depleted the oxygen content of the atmosphere, provided the compartment was closed prior to the drying of the paint. The air obtained from compartments of ships that had been painted with linseed oil paint and closed for a considerable period was found to be markedly deficient in oxygen. In the experiments conducted at this school it was found that small containers such as Erlenmeyer flasks, in which a small quantity of linseed oil had been placed, depleted the air in the flask of its oxygen content and further investigation determined that, if this oil was heated and the flask stoppered before the air had been allowed to cool, the oxygen content could be reduced to as low as 2 per cent within a few hours. The oxidation was markedly accelerated by the addition of a catalytic agent (common commercial paint dryer). The final working method is as follows: The Erlenmeyer flask containing from 75 to 100 cc. of linseed oil was heated, the air above the oil was displaced by carbon dioxide gas and the flask was stoppered with a rubber stopper containing a bent glass tube immediately connected to the rubber tubing from the culture tube. The Stewart clamp was then opened and a partial vacuum was created when the hot oil cooled. The carbon dioxide in the flask diffused across, and as the linseed oil absorbed the oxygen the bacteria began to grow when the oxygen-carbon dioxide tension became optimal. The gas tension can be controlled, as the growth of an organism reaches an optimum, by closing the Stewart clamp and detaching the Erlenmeyer flask containing the oil. Should the bacteria fail to grow further, after the flask has been detached, the oil may again be heated, more carbon dioxide added and the flask attached to the culture tube as before. The growth may be thus accelerated from time to time, as the occasion warrants. The materials necessary for this method of growing anaerobic organisms are the usual culture tubes containing the mediums to be used, two rubber stoppers in which a short piece of bent glass tubing has been inserted, an Erlenmeyer flask, small pieces of chemical rubber tubing, Stewart clamps, linseed oil, a good commercial paint dryer and a tank of carbon dioxide. The author believes that this method of culturing anaerobic organisms is practical and can be applied in any laboratory.

Wisconsin Medical Journal, Madison

33: 369-552 (July) 1934

Significance of the Increasing Diabetic Death Rate. A. T. Holbrook, Milwaukee.—p. 477.
Chronic Rheumatic Diseases: Study of Twenty-Two Cases, with Especial Reference to Vaccine Therapy. G. W. Carlson, Appleton.—p. 481.
Inflammatory Processes Involving the Optic Nerve. M. E. Nesbit, Madison.—p. 484.
Treatment of Chronic Osteomyelitis. W. J. Jones, La Crosse.—p. 488.
Lower Genital Tract Infections in the Female and Their Treatment. H. C. Hesseltine, Chicago.—p. 491.
Fibroma of Ovary. V. F. Marshall and M. E. Swanton, Appleton.—p. 496.
Treatment of Tuberculosis in General Practice: V. A. L. Banyai, Wauwatosa.—p. 499.
Tuberculosis of Knee Joint: Demonstration of Tubercle Bacilli by Direct Smear at Operation. J. R. Regan and J. O. Dieterle, Milwaukee.—p. 502.
Syphilis of Infant and Child. F. J. Broghammer, Superior.—p. 504.
Recent Experience with Resection of Prostate Gland. G. J. Thompson, Rochester, Minn.—p. 509.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 1105-1152 (June 23) 1934

Musings in the Garden: Fifty Years' Association with the Tubercle Bacillus. R. Philip.—p. 1105.
Parasitic Diseases Common to Man and Animals. T. W. M. Cameron. —p. 1110.
Angular Pregnancy: Clinical Entity. J. M. M. Kerr and D. F. Anderson.—p. 1113.
Acute Epidural Spinal Abscess. L. Abrahamson, A. A. McConnell and G. R. Wilson.—p. 1114.
Tetanus in Toy Pistol Wounds. W. Brown.—p. 1116.
Treatment of Pneumococcic Empyema with Bile Salts. B. R. Sworn and T. V. Cooper.—p. 1117.

1: 1153-1196 (June 30) 1934

Congenital Hypertrophic Stenosis of Pylorus: Analysis of One Hundred and Forty-Five Cases Treated by Operation. H. L. Wallace and L. B. Wevill.—p. 1153.
*Improved Method for Determination of Bilirubin in Blood. A. A. H. van den Bergh and W. Grotepass.—p. 1157.
*Antenatal Use of Quinine. F. W. Buddee.—p. 1159.
Observations on Association of Hemolytic Streptococcic Infection with Acute Rheumatism. W. A. R. Thomson.—p. 1162.
Mental Deficiency and Heredity. F. Grundy.—p. 1165.

Method for Determination of Bilirubin.—Van den Bergh and Grotepass describe an improved method for the determination of bilirubin in the serum by means of the diazo method. The first improvement is the colorimetric determination in monochromatic light by means of a dimming wire gauze, instead of the fluid for comparison which was formerly used. This instrument is standardized with azo-bilirubin, derived from chemically pure bilirubin. The second improvement is the prevention of the adsorption of bilirubin to the albuminous precipitate, which occurred when the old technic was followed. This result is achieved by adding, in suitable proportions to the serum, a mixture of reagent, diluted alcohol and a buffer.

Antenatal Use of Quinine.—Buddee gave sixty-six primiparous and thirty-four multiparous women quinine hydrochloride during the last weeks of gestation. A series of the same number of primiparas and multiparas has been observed for comparison. It was found that quinine, given in small doses in the last weeks of gestation, acts as a general tonic and stimulant, and the patients feel well and are often improved. Idiosyncrasy is likely in a small proportion of cases, and its manifestations may include skin reaction and the onset of premature labor. There is no evidence to suggest any fetal toxicity or increase in fetal mortality and, apart from idiosyncrasy, little risk of premature labor. The effect of the drug on the duration of labor is of doubtful value. Inertia is certainly not eliminated.

Indian Journal of Medical Research, Calcutta

21: 661-950 (April) 1934

Identification of Larvae of the Genus Phlebotomus. R. O. A. Smith, K. V. Krishnan and S. Mukerji.—p. 661.
Studies in Pernicious Anemia of Pregnancy: Part VI. Tropical Macrocytic Anemia as a Deficiency Disease, with Especial Reference to Vitamin B Complex. Lucy Wills.—p. 669.
Ages of Epiphyseal Union at Elbow and Wrist Joints Among Indians. R. Lall and B. S. Nat.—p. 683.
Action of Bacillus Coli on Conjugated Bile Acids. K. P. Basu and S. C. Chakravarty.—p. 691.
Splenic Enlargement in South India: Study Based on Postmortem Records. T. B. Menon.—p. 695.
Rat-Flea Survey of Peermade District, Travancore. M. O. T. Iyengar. —p. 723.
Sensitization and Antibody Production in Granuloma Genito-Inguinale. N. G. Pandalai and V. G. Nair.—p. 731.
Comparison of MacConkey's Bile-Salt Broth and Dominick-Lauter Broth in Routine Water Analysis. T. N. S. Raghavachari and P. V. S. Iyer.—p. 735.
Studies on the Antigenic Structure of Vibrio Cholera: Part VI. Analyses of Vibrio Proteins: Racemization. R. W. Linton, B. N. Mitra and D. L. Shrivastava.—p. 749.
Investigations on Nutritive Values of Indian Foodstuffs: Part II. A. R. Ghosh and B. C. Guha.—p. 761.
Observation on Chemistry of the Oxytocic Hormone of the Pituitary Gland: Part II. N. Das and B. C. Guha.—p. 765.
Cultivation of Gonococcus for Vaccine. N. Singh.—p. 769.
Sandfly Fever on Indian Frontier: Preliminary Note on Some Laboratory Investigations. H. E. Shortt, L. T. Poole and E. D. Stephens.—p. 775.
Bacteriophage in Treatment and Prevention of Cholera: Statistical Examination. J. Morison, E. M. Rice and B. K. P. Choudhury.—p. 789.
Preliminary Note on Electrical Charge Carried by the Rabies Virus. G. Sankaran, K. R. K. Iyengar and W. A. Beer.—p. 909.
Electrophoresis Experiments with the Virus of Rabies. R. McCarrison, G. Sankaran and W. A. Beer.—p. 917.

Indian Medical Gazette, Calcutta

69: 301-360 (June) 1934

Congenital Syphilis. R. V. Rajam.—p. 301.
Toxic Effects of Emetine. R. N. Chopra.—p. 309.
Diagnosis and Treatment of Some Urinary Complications in Gynecology. W. C. Spackman.—p. 312.
Relapsing Malaria. D. Manson.—p. 314.
Naga Sore in a Tea Estate Practice. A. K. Ghose.—p. 316.
Incidence of Clonorchis Infection in India. K. N. Bagchi.—p. 318.
Further Observations on the Metabolism of Carotene. B. Ahmad, K. S. Grewal and K. S. Malik.—p. 320.
Prevention of Cholera in Rural India. S. Khan.—p. 323.
Method of Plating Stools. D. Read.—p. 326.
New Capsule Forceps. G. J. Gnanadickam.—p. 327.
*Nutritive Value of Mustard Oil. B. B. Brahmachari.—p. 327.

Nutritive Value of Mustard Oil.—The experiments of Brahmachari show that mustard oil is entirely destitute of vitamin A and tends to inactivate vitamin A in other food articles given along with it. But, as fat, it is as nutritive as other fats, provided sufficient vitamin A is supplied in other articles of food.

Journal of Mental Science, London

80: 187-468 (April) 1934

Attempt at Physiologic Interpretation of Obsessional Neurosis and Paranoia. I. P. Pavlov.—p. 187.
Nature of Inhibition: Review. W. R. Ashby.—p. 198.
Relative Mortality of Cancer in the General Population, and Mental Hospitals of England and Wales: Report Presented to the Infectious Diseases Subcommittee of the Research and Clincial Committee (Royal Medico-Psychological Association). G. de M. Rudolf and W. R. Ashby.—p. 223.
Melancholia: Clinical Survey of Depressive States. A. J. Lewis.—p. 277.
*Blood and Urine Chemistry During Specific Dynamic Action of Glycine in Normal Subjects and in Schizophrenics. C. Reid.—p. 379.
Mental Deficiency Practice at Caterham Mental Hospital. T. Lindsay. —p. 397.

Action of Glycine in Schizophrenic Patients.—Reid observed the chemical changes in the blood and urine during the specific dynamic action of glycine in twenty normal subjects. The dose of glycine used was 22.5 Gm. per square meter of body surface. Six controls were given water instead of glycine. After glycine (average dose 38 Gm.) the aminonitrogen content of the blood reached its maximum near the end of the second hour. In the seventh hour it was usually less than 1 mg. above the fasting level, but there were considerable individual variations. Blood urea nitrogen increased slowly and steadily during the period of observation. The mean increase in the seventh hour after glycine was about 4 mg. per hundred cubic centimeters but the actual increase in a particular case appeared to depend entirely on diuresis and the urea excreted. Blood sugar decreased from about 10 to 15 mg. per hundred cubic centimeters after glycine ingestion but tended to approach the fasting level in the course of from six to seven hours. The non-dextrose reducing substances were not significantly altered. The nonprotein nitrogen fraction (nonurea and aminonitrogen) of the blood was increased after glycine administration. Nitrogen elimination was much increased after glycine. Approximately the excess urea nitrogen excretion during six hours of the postglycine period amounted to 0.23 of the nitrogen given as glycine. The total nitrogen of the urine (less the aminonitrogen and ureanitrogen fractions) was increased after glycine feeding. This was due either to increased elimination or to increased production in the tissues, or to both. Sulphate excretion after glycine was maintained at a higher level than was found for controls during the postabsorptive period. It appeared that the sulphate excretion provided a more reliable index of specific dynamic action than the nitrogen excretion during the period of observation in the experiments dealt with. The examination of schizophrenic subjects after glycine ingestion (average dose 32 Gm.) did not reveal any striking deviation as regards their blood and urine chemistry from the results in normal subjects. The character of the mean blood aminonitrogen and urine aminonitrogen curves suggested delay in the absorption of the ingested material as compared with normal. Blood nitrogen and urine nitrogen estimations were not significantly different in schizophrenic patients from normal subjects. Approximately the excess urea nitrogen excretion after glycine amounted to 0.21 of the nitrogen ingested as glycine. Sulphate excretion on the whole was less for schizophrenic patients than for normal subjects after glycine. Blood urea values in schizophrenic patients and in normal controls after the administration

of 15 Gm. of urea in 100 cc. were suggestive of delayed absorption, since the rise in the blood urea was slower in the former. The author considers the attempt to demonstrate variations in the specific dynamic action of foodstuffs or glycine by ingestion methods in psychotic patients is also unjustifiable, in view of the variations in the processes of absorption that have been demonstrated in both normal and psychotic subjects.

Lancet, London

1: 1155-1210 (June 2) 1934

Rôle of the Liver in the Metabolism of Carbohydrate and Fat. C. H. Best.—p. 1155.
Possible Rôle of the Fetus in Labor. R. A. Gibbons.—p. 1160.
Changes in the Central Nervous System Due to Electrocution. E. A. B. Pritchard.—p. 1163.
Treatment with Carbon Dioxide Snow Pencil. H. C. Semon.—p. 1167.

1: 1211-1266 (June 9) 1934

Experiments on Man. J. Barcroft.—p. 1211.
Rôle of the Liver in Metabolism of Carbohydrate and Fat. C. H. Best.—p. 1216.
Multiglandular Disease. O. Leyton.—p. 1221.
*Use and Action of Histamine in Rheumatism. B. Shanson and C. G. Eastwood.—p. 1226.
*Clinical Application of Histamine in Rheumatism. F. S. Mackenna.—p. 1228.

1: 1267-1322 (June 16) 1934

Observations on Some Injuries of the Knee Joint. N. Dunn.—p. 1267.
Rôle of the Liver in Metabolism of Carbohydrate and Fat. C. H. Best.—p. 1274.
New Technic for the Self Administration of Gas-Air Analgesia in Labor. R. J. Minnitt.—p. 1278.
Vitamin C in the Human Pituitary. J. Gough.—p. 1279.
Hydatid Disease of the Lung: Case Report. R. G. P. Evans.—p. 1281.

Use of Histamine in Rheumatism.—Shanson and Eastwood studied the effects of histamine and thiohistamine in the treatment of seventy adult cases of chronic rheumatism and allied disorders. The series included examples of rheumatoid arthritis, fibrositis, osteo-arthritis, subacute rheumatism and gout. It was not possible to withhold other treatment (physical therapy) from these patients; nevertheless the results due to histamine could be easily recognized by the time relation which they bore to the injection. Histamine was given by subcutaneous injection. The solution was prepared in the strength of 1 mg. of histamine acid phosphate to 1 cc. of saline solution, and 0.5 per cent phenol was added as a preservative. The initial dose was 0.1 mg. (i. e., 0.1 cc.), and this was increased daily by 0.05 mg. until definite improvement was observed. A satisfactory dose was usually found to lie between 0.1 and 0.5 mg. This dose was repeated two or three times a week and further increased if the response diminished. Thiohistamine was given by intramuscular injection and was found to be less potent than histamine. Histamine produced benefit in examples of all types of rheumatism, but a certain type of case was particularly amenable to this treatment; that is, the coexistence of impaired grip, the result of periarticular arthritis in the hand, with vasomotor symptoms. The response to histamine varied from patient to patient, and even in the same patient at different times. The following is a list of all the effects that were observed: flushing, relief of pain, increased range of joint movement, relief of vasomotor symptoms, sweating, headache, dizziness, drowsiness, increased appetite, a sense of well being, changes in blood pressure and temperature, and paresthesias.

Clinical Application of Histamine in Rheumatism.—Mackenna presents the results he has obtained in rheumatism with histamine by ionization and massage. With the treatment the patient experiences an immediate relief from pain, either complete or partial, and can demonstrate a greater range of movement when previously there was restriction. This lessening of pain is always present and may last a few hours, a few days or permanently. In addition, there is a feeling of local warmth and general well being. The undesirable results that must be carefully watched for include headache or a feeling of fulness in the head, tachycardia, a feeling of constriction in the chest with consequent breathlessness, burning and faintness, any one of which is an indication for the immediate cessation of the treatment. Treatment may be given daily. Histamine has a definite place in the treatment of fibrositis and neuritis, and in all chronic rheumatic disturbances associated with pain and limitation of movement. With histamine it is possible to cure fibrositis and neuritis completely and almost invariably to decrease or remove pains of the joints in other suitable cases. The process of ionization with histamine requires unremitting attention during the whole of the sitting and, even more important, the tolerance of a given patient as to both time and milliamperage varies greatly from day to day.

1: 1323-1376 (June 23) 1934

Praise and Dispraise of Doctors. R. Hutchison.—p. 1323.
Infantile Diarrhea, with Especial Reference to Dehydration and Otitis Media. M. Maizels and J. Smith.—p. 1329.
Blood Sedimentation Rate and Plasma Proteins. G. R. P. Aldred-Brown and J. M. H. Munro.—p. 1333.
*Protective Action of "Bayer 205" Against Trypanosomes of Man. H. L. Duke.—p. 1336.

Action of Complex Carbamide Compound of Trisulphuric Acid Against Trypanosomes.—Duke states that a consideration of the evidence now available suggests that: 1. A single dose of 1 grain (0.065 Gm.) of complex carbamide compound of trisulphuric acid (germanin) given intravenously will protect a man for at least 113 days from infection by tsetse carrying cyclically Trypanosoma rhodesiense. 2. The administration of a second dose three weeks or more after the first enhances the protective effect of the compound. 3. Within certain at present undetermined limits the protective effect may be directly proportional to the number of doses given, although this point is not yet definitely settled. Three infected volunteers, all treated with complex carbamide compound of trisulphuric acid as soon as trypanosomes were first detected in the peripheral blood and each receiving six doses of 1 grain were protected against T. rhodesiense for 180, 182 and 190 days, respectively. 4. The natural sensitiveness of the mammal to the trypanosome plays an important part in determining the duration of the protection conferred by the compound, the more susceptible monkey receiving less protection per dose per kilogram of body weight than the more resistant man. It is probable that the protection conferred by the drug is greater against T. rhodesiense than against T. gambiense. Trypanosoma gambiense is an established parasite of man, whereas research has shown that T. rhodesiense may in certain circumstances lose its pathogenicity to man. If, then, the resistance of man to T. rhodesiense is indeed greater than to T. gambiense, then this factor will in all probability tend to produce the effect suggested. It is also possible that T. rhodesiense is actually more sensitive to the compound than is T. gambiense. Strains of T. rhodesiense vary in their power to use man. The drug will be most effective against the weakly endowed strains supplementing the natural resistance of the host. Trypanosoma rhodesiense strain LX was strongly pathogenic to man. The author points out that the prophylactic injection of from 1 to 1½ grains (0.065 to 0.1 Gm.) for each adult should be repeated every three months while exposure to infection continues.

Chinese Medical Journal, Peiping

48: 415-514 (May) 1934

Chronic Frontal Sinusitis. M. L. Hu.—p. 415.
Kline Test in Diagnosis of Syphilis: Including a Study of Its Use in Experimental Syphilis in Rabbits. Dorothy Huie Wong and T. L. Ch'in.—p. 431.
*Immunization Against Diphtheria and Scarlet Fever with Combined Toxoid. E. T. H. Tsen.—p. 445.
Genital Tuberculosis in the Male: Rationale of Epididymovasectomy. H. E. Campbell.—p. 449.
Phrenicectomy in Treatment of Pulmonary Tuberculosis, with Analysis of Forty-One Cases. T. L. Leo and C. Chang.—p. 457.
Bladder Stone. P. B. Price.—p. 462.
Foreign Bodies in Urinary Bladder. Z. M. Kau.—p. 475.
Acute Suppurative Infections of the Upper Neck. R. A. Peterson.—p. 481.

Immunization Against Diphtheria and Scarlet Fever with Combined Toxoid.—Tsen administered three doses of a mixture of four volumes of diphtheria toxoid lot 6 and six volumes of scarlatinal toxoid lot 1, both of which were prepared in the usual manner by the addition of 0.4 per cent of formaldehyde to the original standardized toxins and incubating at about 40 C. until they were detoxicated, to 112 children who gave positive Schick and Dick reactions. The results show that ninety, or 80.36 per cent, became Schick negative, sixty-eight, or 60.71 per cent, became Dick negative and fifty-six, or 50 per cent, became both Schick and Dick negative. The batch of combined toxoid used contained only 4.8 Lf units of diphtheria toxoid and 12,000 minimal skin doses of scarlatinal toxoid per cubic centimeter.

Archives Méd.-Chir. de l'App. Respiratoire, Paris

9: 81-188 (No. 2) 1934

Rational Indications for Phrenicectomy. A. Bonniot and J. Foix.—p. 81.
*Abdominal Complications of Phrenicectomy. Y.-J. Longuet and C. Launay.—p. 157.

Abdominal Complications of Phrenicectomy. — The abdominal complications of phrenicectomy are divided into early and late types by Longuet and Launay. After left phrenicectomy, some patients complain for several days of pains in the upper part of the abdomen at the level of the left hypochondrium. In other patients, vomiting may develop into a serious complication. In any case the early complications appear immediately after the operation and are almost always transitory. The most rational explanation is that they are attributable to traumatisms of the intercostal nerve fibers which anastomose in the diaphragm with the terminal branches of the phrenic nerve. More important are the late complications that tend to develop months or even years after the operation. Their frequency varies in different reports, but, although not apparently rare, really serious cases are the exception. Left phrenicectomy is especially likely to produce these complications, owing to the location of the stomach on the left. Gastric disturbances predominate as a clinical symptom. In the mildest cases they consist of a constrictive and oppressive sensation or of postprandial distention in the left hypochondrium. Gaseous eructations and flatulence may accompany these symptoms. A frequent symptom is the sensation of rapid gastric repletion in the course of a meal. If the patient continues to eat, he becomes nauseated and belches and vomits. In serious cases, intractable vomiting occurs. Intestinal disorders also sometimes occur. Two principal roentgenologic images have been described: the markedly dilated stomach and the volvulus and folded stomach. Rare clinical variants are also described: signs of stenosis of the terminal segment of the esophagus, duodenal stenosis after right phrenicectomy, and painful disorders of the iliac fossa and right flank. Treatment in mild cases is dietetic. It consists of small and frequent feedings. Gastric lavage is sometimes practiced with success. Prevention is more important. The authors believe that persons having ptosis and gastric ulcer are especially liable to abdominal complications, and phrenicectomy should not be practiced. Marked displacement of the heart to the left is an important contraindication.

Gynécologie et Obstétrique, Paris

29: 385-496 (May) 1934

Creation of Artificial Vagina with Help of Ovular Membranes of Egg at Term. A. Brindeau.—p. 385.
*Replacement of Uterovaginal Tamponade By Uterine Examination Combined with Intravenous Injection of Hypophysine. E. Bohler and M. Reiles.—p. 393.
Mechanical Traction in Obstetrics. F. Houssay.—p. 405.
Irreparable Large Fistulas of Bladder. M. G. Roca.—p. 409.
Observations on Wolffian Bodies and Müller's Canals. Marie-Louise Quadras-Bordes and B. Plá Majó.—p. 429.
Exposure of Sutures to Quartz Lamp After Labor. A. Gillerson, G. Hatzkelevitch and I. Rabinovitch.—p. 432.
*Personal Modification of Credé's Method. W. Karnicki.—p. 437.

Uterovaginal Tamponade.—Bohler and Reiles discuss the rôle of uterovaginal tamponade in the hemorrhagic complications of delivery. Although granting the advisability of tamponade in selected instances, the authors advance several disadvantages to its indiscriminate use. In the hemorrhages of delivery treated by expression of the placenta, manual detachment, or massage, tamponade is superfluous if the uterus is well contracted. If the uterus after being packed with gauze does not react actively, it is technically impossible to fill it to the limits of elasticity, and in any case this help would come too late. The hemostatic effect is due to reinstatement of good contractions rather than to the direct action of the tampon. The most important disadvantage of the tampon is the slowness with which the hemostatic effect is obtained. The authors lost five women in this way. Tamponade, they feel, is a traumatizing method that may lead to serious lesions of the genital organs. As a substitute for this method of treatment, the method of uterine examination immediately after delivery, as described in an earlier publication, and intravenous injection of hypophysin is proposed. As an intra-uterine intervention often producing a vigorous massage of the organ, it constitutes an exciting agent of the first order, which often starts powerful contractions in the atonic uterus, rapidly returns the organ to a state of retraction, and stops hemorrhages. This action is not constant, however, and the intravenous injection of hypophysin is also advisable. In more than 200 intravenous administrations of hypophysin the authors observed no accidents. This method may be substituted for tamponade without any of the dangers inherent in the latter, with practically no mortality, with a slight morbidity and, especially, with a prodigious rapidity of action allowing the arrest of nonmassive hemorrhages in less than a minute.

Modification of Credé's Method.—Karnicki's modification of Credé's method consists in producing a retroplacental hematoma and then the expulsion of the placenta without tearing. The procedure consists of four steps: 1. Search for the point of attachment of the placenta by palpating the region of the uterus assymetrically enlarged (usually this is one of the horns of the uterus, especially the right). 2. Periodic massage, practiced with two fingers, of the center of this region until the contraction of the small massaged segment is obtained. This indicates the separation of the placenta and the creation of a retroplacental hematoma. 3. After the formation of the contracted area at the center of the softened portion of the uterus, the surrounding region is massaged until a symmetrical form is obtained indicating a complete placental separation. 4. Expression with the right hand on the segment previously massaged in order to avoid crushing the placental tissues. The hematoma alone is compressed in pushing this part in the direction of the uterine canal to give a favorable direction to the expulsive force. To avoid the production of a fold between the uterine body and the lower genital passages, the palm of the left hand is placed at the level of the pubis. It is useful but not necessary for an assistant to pull on the cord to direct the exit of the placenta. This procedure possesses the advantage of establishing the diagnosis of adherence. The author has used this method for four years and rarely practices artificial delivery any more. When internal manual intervention is necessary, a nonadherent placenta is never found.

Schweizerische medizinische Wochenschrift, Basel

64: 589-608 (June 30) 1934

*Traumatic Tuberculosis. H. von Meyenburg.—p. 589.
*Significance of Tonsils as Port of Entry in Tuberculosis. E. Schlittler.—p. 594.
Significance of Tuberculosis of the Aged in Campaign Against Tuberculosis. M. Kartagener.—p. 598.
General Points of View on Pulmonary Tuberculosis. C. Schneiter.—p. 602.
Trials with a New Gold Preparation in Pulmonary Tuberculosis. W. H. Gonin.—p. 604.

Traumatic Tuberculosis.—Von Meyenburg discusses cases in which he rendered expert testimony on the traumatic character of tuberculosis. He concludes that traumatic tuberculosis is rare and thinks that complete responsibility can be talked of only in case of inoculation or vaccination tuberculosis, that is, when together with an injury of the skin a tuberculous infection takes place, or when an existing wound becomes infected with tubercle bacilli. In cases of this type not only should the preexisting tuberculosis be accepted but a differentiation should be made between isolated organ tuberculosis that does not produce hematogenic metastases, even under the influence of a trauma (the most characteristic form being chronic pulmonary tuberculosis), and the hematogenically generalizing tuberculosis that is characterized by dissemination and by tuberculous manifestations in various parts of the organism. In the latter form, a considerable mechanical trauma may lead to a localization in the injured area, but presumably then only when accident and dissemination concur more or less.

Tonsils as Port of Entry in Tuberculosis. — Schlittler relates that in ninety-eight patients with cervical lymphomas, suspected to be of a tuberculous character, but in whom pulmonary tuberculosis or tuberculosis of other organs could be excluded, the tonsils were removed and their examination revealed tuberculosis in forty-eight cases. Thus it appears that in case of a prolonged lymphadenitis of the neck, particularly at the angle of the jaw, a primary tuberculous disease of the corresponding tonsil may be suspected, especially when in

the region of the upper air and food passages there are no other causes detectable that would explain the swelling of the lymph nodes, and when the examination of the lung likewise remains negative. In addition to the subacute or chronic form of lymphadenitis, there is also one in which an acute swelling of the cervical lymph nodes at the angle of the jaw becomes manifest with the symptoms of an acute tonsillitis or peritonsillitis. However, the stationary behavior differentiates it from the swellings of lymph nodes caused by other infections. He thinks that primary tuberculosis of the tonsils is not as rare. There is generally no macroscopic change in the tonsil and only microscopic examination permits a diagnosis. It is nevertheless advisable to remove the primary focus, the tonsils, for this measure would prevent a further invasion of tubercle bacilli from the tonsils into the cervical lymph nodes and thus would lead to a more rapid cure of the tuberculosis of the cervical glands. The tonsils of these patients should always be subjected to microscopic examination in order to gain a better insight into the interrelation between primary tonsillar tuberculosis, tuberculosis of the lymph nodes and tuberculosis of the lungs. Physical and roentgenologic examination of the lungs should also be done.

Chirurgia degli Organi di Movimento, Bologna

18: 529-631 (Dec.) 1933

Results of Acute Infantile Osteo-Arthritis and Congenital Luxation of Hip. G. Jemma.—p. 529.
Simple and Practical Method for Construction of Beds and of Plaster Apparatus. G. Câmpean.—p. 538.
Clinical and Roentgenologic Contribution to Study of Localized Diseases of Intervertebral Disk. C. Schapira.—p. 545.
Contribution to Study of Etiology of Paget's Disease. S. Cimino.—p. 560.
Roentgenologic Diagnosis of Calcified Parasites in Muscular Site. C. Casuccio.—p. 569.
Apparatus for Mobilization of Scapulohumeral Articulation. F. Vannini.—p. 582.
Evolution of Mediastinal Abscesses Due to Pott's Disease with Climatotherapy. G. Mancini.—p. 587.
*Functional Test of Reticulo-Endothelial System with Congo Red for Qualitative Diagnosis of Osteo-Articular Tuberculosis. F. Rabboni and G. Alberghina.—p. 599.
Mixed Intra-Articular and Extra-Articular Arthrodesis of Shoulder in Cases of Poliomyelitis of Upper Limb. O. Scaglietti.—p. 609.
Congenital Spinal Anomaly: Rare Case. F. Cataliotti.—p. 616.

Functional Test of Reticulo-Endothelial System for Diagnosis of Osteo-Articular Tuberculosis.—Rabboni and Alberghina experimented with the congo red test on thirty patients having osteo-articular tuberculosis. Their technic is the following: About 8 cc. of blood is aspirated from a vein of the elbow and poured into a centrifuge tube containing 1 cc. of a 5 per cent solution of sodium citrate in physiologic solution of sodium chloride, and, without removal of the needle, a 1 per cent solution of congo red is injected in the proportion of 1 cc. for every 6 Kg. of body weight. This is the dosage used by most authors in the congo red test. After intervals of four minutes and of sixty minutes, 5 cc. of blood is aspirated from the other arm of the patient and put in tubes containing 1 cc. of the solution of sodium citrate. The blood is centrifugated and the concentration of the color in the plasma is determined by means of the colorimeter of Hellige and by artificial illumination. These tubes are compared with the sample solution prepared from the plasma of the blood originally obtained, making a 1:10,000 solution of congo red. The authors found that the functional activity of the reticulo-endothelial system by means of the congo red test in various anatomoclinical forms of osteo-articular tuberculosis constantly shows a behavior parallel to the seriousness of the disease, in that there is a greater retention of color on the part of the cellular elements of the reticulo-endothelium in benign forms tending toward fibrosis, or beginning and slight retention in fungoid forms. In forms considered fibrosclerotic processes with a tendency to ankylosis, the congo red found in the circulation one hour after injection varies from 50 to 60 per cent; in beginning forms of hydrarthrosis from 60 to 77 per cent; in forms with cold abscess, with or without fistulas, from 63 to 85 per cent; in fungoid forms from 74 to 95 per cent. Since there was a constant and gradual correspondence between the gravity or lack of gravity of the anatomoclinical system as tested by congo red, the authors feel authorized in attributing some value to this test in the qualitative diagnosis of this localization of the tuberculous infection.

Archiv für klinische Chirurgie, Berlin

179: 485-614 (June 22) 1934. Partial Index

*Surgically Important Localizations of Heterotopic Endometriosis. A. Fürst and F. Škorpil.—p. 485.
Studies of Applicability of Our Contrast Medium in Angiography of Healthy and Diseased Vessels. O. Stör.—p. 502.
*Tuberculosis of Mammary Gland and Possible Diagnostic Errors. A. L. Resnitzky.—p. 519.
Technic of Tying Surgical Knot. I. Bulinin.—p. 526.
Contribution to Subject of Gastric Tuberculosis. S. Szacsvay.—p. 529.
Treatment of Fractures of Shaft of Femur in Children. W. Schmid.—p. 537.
Wound Healing and the Thyroid. A. S. Kosdoba.—p. 551.
Ulcers of Greater Curvature of Stomach. W. Heim.—p. 561.

Surgically Important Localizations of Heterotopic Endometriosis.—Fürst and Škorpil discuss the symptomatology and the pathology of surgically important sites of development of heterotopic endometriosis. These involve principally the navel, Poupart's ligament, the intestine and the urinary bladder. The authors describe three personal cases: (1) an endometrioma of the navel with a characteristic bleeding at each menstruation, (2) a recurrent endometrioma of the extraperitoneal portion of Poupart's ligament with invasion of the femoral vein, and (3) retrocervical endometriosis invading the rectum in which, during each menstrual period, there was an exacerbation of the intestinal symptoms and rectal menstruation. Because of a correct diagnosis and favorable location the authors were able to observe the endometrioma through a rectoscope. They were the first to describe the alterations in a rectal endometrioma provoked by the menstrual function as well as their disappearance after roentgenologic castration. In the histologic studies of their cases the authors found among the usual elements scattered elastic fibers, which they believe developed from the vessel wall. Tumor tissue excised repeatedly at menstrual periods showed histologic alterations corresponding to those of uterine mucosa.

Diagnostic Errors in Connection with Tuberculosis of Mammary Gland.—Resnitzky states that tuberculosis of the mammary gland is rare. It occurs almost exclusively in women, with greater frequency in multiparas. The involvement is always unilateral, the right breast being the one more frequently involved. The author considers biopsy the most reliable method of diagnosis. Errors in diagnosis based on histologic studies of removed biopsy material are due to faulty technic in performing the biopsy. Biopsy pieces must be sufficiently large to permit examination of a number of areas as well as to include a zone of normal tissue. The author reports a personal case in which histologic examination of biopsy material revealed a structure closely resembling that of a squamous cell carcinoma. Histologic examination of the amputated breast revealed its tuberculous character.

Beiträge zur klinischen Chirurgie, Berlin

159: 559-670 (June 6) 1934

*Diagnosis and Treatment of Pressure Damage to Spinal Cord. D. Kulenkampff.—p. 559.
Treatment of Prostatic Hypertrophy. W. Willing.—p. 576.
*Hyperparathyroidism and Related States. J. Bauer.—p. 583.
*Paget's Disease of Bones and Parathyroid Tumors. R. Kienböck.—p. 597.
Treatment of Compound Injuries of Skull. R. Wanke and H. Wesel-mann.—p. 612.
Chronic Duodenal Ileus and Its Surgical Treatment. W. Nell.—p. 639.

Treatment of Pressure Damage to Spinal Cord.—In arriving at an early diagnosis of a spinal cord lesion one should aim, according to Kulenkampff, at a recognition of the existence of damage to the cord rather than at determination of the nature of the lesion. The purely anatomic diagnosis based on the recognition of involvement or paralysis of definite nervous elements is not sufficiently refined to permit of an early diagnosis. When such a diagnosis is possible the outlook for a cure is rather poor. The living organism reacts to damage by a complicated interplay of adaptation and correction mechanisms for which a definite anatomic pattern does not exist. The recognition of these changes, a functional diagnosis, should precede the purely anatomic one. Variability is a characteristic feature of these early functional changes. There may be noted an early fatigue of the legs or arms, a change in the psychic attitude toward a limb, and insignificant circulatory changes giving rise to cold or to warm feet. There may be noted abnormal pigmentation, sweating, and abnormal growth

of hair or of nails. The patient may develop a clumsiness in movements and a tendency to stumble or to drop objects. On physical examination there are found, as a rule, lively reflexes which are of no diagnostic value and, occasionally, a doubtful or a strongly suggestive Babinski sign. A definite impairment in power in the same and similarly developed muscle groups is quite suggestive. Simultaneously with Dandy, the author called attention to the so-called coughing and sneezing symptom, the development of a severe pain on coughing or sneezing. There may be limitation of the movements of the spinal column due to associated alterations in it, or a slight gibbus may be present. It is essential to get all the information possible from the simple spinal puncture. Xanthochromia, for example, is characteristic of a tumor, while the Queckensted test furnishes information as to the existence of an obstruction. The latter, however, is not always reliable. The diagnosis of the level of the lesion is arrived at through roentgenography after the injection of iodized sesame oil. The author never injects more than 1 cc. of this substance and did not see any damage arise from its use. He stresses the necessity of taking stereoscopic views of the cord after the injection of iodized sesame oil. These, not infrequently, give a remarkably clear localization and delineation of a shadow caused by the tumor. This is a distinct advance over the method of level localization by the purely neurologic examination. The iodized sesame oil roentgenographic method, however, is not entirely free from errors. In the presence of arachnoiditis there may be a definite obstruction to iodized sesame oil filling, which may be erroneously interpreted as due to tumor. The author operated in two such cases. Stereoscopic and lateral views of the spinal column are essential in recognition of associated scoliosis, lordosis or slight gibbus. Intercostal neuralgia, lumbago or sciatica may be caused by pressure of the tumor. A spinal puncture is therefore indicated in their presence. The differentiation of an extradural or intradural tumor can be made in many cases on the presence of neurologic signs. In the operative treatment the author emphasizes the advantages of local anesthesia, of the lateral position, preferably on the left side, of slow, painstaking exposure and of omission of drainage. Operations for recurrence are difficult but are worth while.

Hyperparathyroidism and Related States.—Bauer reports the further developments in the case in which F. Mandl removed, in 1926, an adenoma of the parathyroid for the cure of osteitis fibrosa cystica generalisata of von Recklinghausen. This was the first operation of the kind to be performed for the cure of von Recklinghausen's disease of the bones. The result was good, and the formerly bedridden patient was able to walk without pain at the end of two months. The improvement lasted six years. In 1932 the patient was admitted to Bauer's clinic because of the return of the original symptoms of pain on movement of the extremities and because of progressive deformity of the skeletal frame. While under observation, the patient developed renal colic caused by calculi in the right renal pelvis. The blood calcium was slightly increased (12.5 mg. per hundred cubic centimeters), but the phosphorus was lowered (2.5 mg. per hundred cubic centimeters). The calcium balance was decidedly negative because of the abnormally high amounts of calcium excreted in the urine. There was a lowering of electrical irritability of muscles and nerves. The symptoms mentioned were significant of a return of a state of hyperparathyroidism possibly due to a formation of another hyperfunctioning parathyroid tumor. Roentgen irradiation of the pelvis, the femurs, the tibias and the region of the parathyroids was ineffective. A secondary operation was undertaken by Mandl, but in spite of painstaking search no tumor of the parathyroid was found. A subtotal thyroidectomy was performed. An examination of the removed tissue by the pathologist Professor Sternberg revealed one normal parathyroid body on the surface of the thyroid and another normal body within the thyroid. There was no improvement after the operation. At the end of two months the patient was in worse condition than before the operation. The blood calcium did not sink, the inorganic blood phosphorus remained unaltered, and the excretion of abnormally high amounts of calcium in the urine persisted. The author is of the opinion that there exists a hyperfunctioning adenoma of the parathyroid which, because of inaccessible location, was not found.

Paget's Disease of Bones and Parathyroid Tumors.—Kienböck states that the consideration of the entire course of Mandl's case convinces him that the original diagnosis of Recklinghausen's osteitis fibrosa was erroneous. He believes that to be a case of Paget's disease of the bones associated with a rather unusual complication of a parathyroid tumor and irregularly arising porosis, softening, bending and fragility of the bones accompanied by pains rarely observed in this condition. The roentgenologic appearances of the bone changes are characteristic of Paget's disease. Diffuse thickening, malacic bending, alternating porosis and thickening, and involvement limited to the epiphyses and immediately adjacent part of the shaft rather than of the shaft alone are characteristic of Paget's disease. There was an absence of large cysts such as are seen in Recklinghausen's disease. The author regards the occurrence of the parathyroid adenoma here as a coincidence rather than the cause of the condition. The mild state of hyperparathyroidism, as suggested by the studies of blood chemistry in the case, is not infrequently seen in the porotic form of Paget's disease. Additional evidence is to be seen in the fact that a sister of the patient, aged 49, was found to present a clear cut clinical and roentgenologic picture of Paget's disease. Familial occurrence of Paget's disease is not uncommon; it has not thus far been described in connection with Recklinghausen's disease. The error in the original diagnosis arose because in Germany at that period the existence of two separate entities was not appreciated. Nevertheless the author feels that Mandl's work contributed much to the subject of Recklinghausen's disease. The author is of the opinion that bone changes develop first and that these are followed by the development of hyperparathyroidism. The latter influences unfavorably the progression of skeletal changes and retards regenerative processes. Since the operation by Mandl a number of similar operations have been performed the world over with success in cases of osteitis fibrosa of Recklinghausen.

Klinische Wochenschrift, Berlin

13: 937-968 (June 30) 1934

Colloid Chemical Pathology of Central Nervous System. A. von Braunmühl.—p. 937.
Extrathyroidal Development of Iodine Compounds with Thyroxine-Like Effect. I. Abelin.—p. 940.
*Criticism of Demonstration of Occult Hemorrhages and New Method. I. Boas.—p. 942.
*Behavior of Sex Hormones of Anterior Lobe of Hypophysis in Urine of Older Men. A. Kukos.—p. 943.
Roentgenologic Studies on Skeletons of Uniovular Triplets. F. Buschke.—p. 944.
*Changes in Blood Distribution Caused by Changed Position. H. Ude.—p. 949.
Therapy of Pernicious Anemia. F. Reimann and F. Fritsch.—p. 951.
Saccharose in Urine in Case of Disorder of Pancreas. T. Baranowski and W. Mozołowski.—p. 955.

Method for Demonstration of Occult Hemorrhages.—Boas emphasizes that, without extracting from the feces all substances disturbing the peroxidase reaction, that is, all anticatalytic substances, correct results cannot be expected in the examination of the feces for occult hemorrhages. Further, he points out that all peroxidase reactions known thus far are extremely volatile, owing to the further oxidative transformation of the reaction products. This is especially true of the benzidine test. A further disadvantage of the benzidine as well as of the guaiac tests is the slow development of the reaction, particularly if the blood content is slight. This retardation may lead to a negative interpretation. The author describes a new peroxidase reaction, which is in many respects superior to the older methods. He employs as reagent 2.7 diamino-fluorene-hydrochloride (called for short "fluorene reagent"); it was first introduced as a reagent for persulphates and blood pigments by Schmidt and Hinderer. This reagent proved more sensitive than benzidine. Since the aqueous solution of 2.7 diamino-fluorene-hydrochloride was not sufficiently stable, the author employed a solution in concentrated acetic acid. He found that a 0.2 per cent solution of the reagent in 50 per cent acetic acid was the most suitable. The test is made in the following manner: A small amount of feces is placed into a porcelain dish, pure acetone is poured over it and after repeated shaking it is left standing for from five to ten minutes. After the acetone has been poured off, the smear is dried by shaking it. Then 5 cc. of absolute alcohol and ten drops of glacial

acetic acid are poured over it and it is mildly shaken and then left to stand. The alcohol is poured off into a clean test tube and from three to five drops of the reagent and the same amount of a 3 per cent solution of hydrogen dioxide are added. If there is a considerable amount of blood pigment, a green to blue coloration sets in after several minutes of shaking. If kept in a dark place the color remains unchanged for twenty-four hours or longer, when it changes to olive green. The greater the amount of hematin, the more intense is the coloration and vice versa. If the hematin content is slight, the reaction becomes manifest only after from ten to twenty minutes, if it is entirely absent, there is no green coloration at all. The author further describes a more complicated modification, in which the colors are more vivid and the product of the reaction can be kept for longer periods.

Hypophyseal Sex Hormone in Urine of Old Men.—Following a review of the literature on the behavior of hypophyseal sex hormone in the urine of old women, Kukos reports his studies on the urines of seventeen old men, aged between 70 and 84. The urine was examined not in the native condition but in a fivefold concentration. The test object was the same as in the Aschheim-Zondek test. The estimation of the outcome of the test was based on the microscopic examination. A tabular report of the results of the test indicates that the vagina never showed a positive reaction and that all positive reactions were detected by the microscopic examination of the ovaries. An increased elimination of the hypophyseal sex hormone could be detected in only six out of seventeen cases, and in four of these six the reaction was weak. The author concludes from this that the elimination of the hypophyseal sex hormone is increased in only a small percentage of aged men. He is unable to give an explanation of this phenomenon.

Changes in Blood Distribution Caused by Changes in Position.—Ude studied the temporary course of fluctuations in the fluid distributions within the body by means of an apparatus resembling Mosso's scale. He found that when a young, healthy adult is placed on the scale while lying horizontal and on his back, there is an increase in weight toward the head for approximately thirty minutes. This "shifting time" is longer when the test is made toward evening than when it is made in the morning. If the person has been lying down for from sixty to ninety minutes previous to the test, the erect posture of several minutes' duration does not produce a shifting in the center of gravity, but after approximately ten minutes of standing the scale indicates again an increasing heaviness toward the head shortly after the person has been placed on it in the horizontal position. The shifting time is now approximately proportional to the time of standing. The author assumes that this shifting in weight is due to the fact that while the person is standing the blood sinks into the lower extremities and that it flows back again when he is reclining. He thinks that on the basis of these observations it may be possible to estimate conditions of incipient cardiac insufficiency, because in persons with such disorders the time of shifting and probably also the quantity of shifted fluid differ from those in normal persons.

Monatsschrift für Kinderheilkunde, Berlin

60: 81-240 (June 14) 1934

Physical and Chemical Aspects of Normal Feces of Nurslings and Children. T. Baumann.—p. 81.
Clinical Experiences in Epidemic of Poliomyelitis in Szeged 1932. E. Kramár and I. Liszka.—p. 136.
*Pathogenesis and Therapy of Nursling Toxicosis. J. Csapó and E. Kerpel-Fronius.—p. 154.
*Mode of Action of Apple Diet in Diarrhea. H. Fasold.—p. 169.
Experimental Investigations on Influence of Food on Quantity and Constituents of Mother's Milk. U. S. Ružičić.—p. 172.
Morphine Disease of Infants Born to Mothers Addicted to Morphine. E. Menninger-Lerchenthal.—p. 182.
Influence of Food (Intake of Carbohydrates, Proteins and Fats) on Blood Sugar Content in Children. A. Panoff.—p. 194.
*Problem of Pneumococci During Childhood. G. Joppich.—p. 205.
*Treatment of Alimentary Intoxication with Intravenous Drop Infusions According to Schick and Karelitz. Helga Schmiedeberg.—p. 220.
Problem of Diphtheria Therapy. F. Barber.—p. 224.

Pathogenesis and Therapy of Nursling Toxicosis.—Among twenty-eight cases of nursling toxicosis, Csapó and Kerpel-Fronius observed only one that could be considered a pure alimentary intoxication; in all others an infectious focus could be demonstrated. To be sure, in most cases the nutrition was likewise faulty. They give the history of one case of a parenteral toxicosis (otitis and mastoiditis) with a subsequent intestinal disturbance. They think that the mastoiditis was the most important factor in the etiology of the toxicosis, but it was not recognized, because of lack of symptoms. However, the unrecognized focus continuously discharged bacterial toxins into the blood stream, thereby impairing the parenchymal organs and reducing the tolerance to such an extent that even feeding with two-thirds milk presented an overburdening of the intermediate metabolism. The increased elimination of water led to exsiccosis. The quantity of urine was reduced, the elimination of the nitrogen containing waste matters became insufficient and the rest nitrogen of the blood increased. The elimination of the phosphates and of the organic acids that are produced in larger amounts was disturbed. The organic acids and to a certain extent also the phosphates reduced the bicarbonate, and a decompensated acidosis developed. By way of the gastro-intestinal tract, loss of chloride took place, which manifested itself in a hyposalemia. The authors think that the reported case is the most frequent type of parenteral toxicosis. As the most characteristic aspect of the intoxication, they consider the disturbance in consciousness and the deficient oxidation. In the subacute cases, the disturbance in consciousness may be absent. The treatment of enteral and parenteral toxicoses, the authors generally begin with gastric lavage. To counteract the acidosis and to stimulate the cardiac action, they administer intravenously 50 cc. of a 4 per cent solution of sodium bicarbonate and 20 cc. of a 20 per cent solution of dextrose. In case of a severe acidosis the injection is repeated after twelve hours. Orally the child receives for from twenty-four to thirty-six hours only tea (sweetened with gluside) and Ringer's solution (1:3). The authors consider it inadvisable to let the patients fast longer than thirty-six hours, since a prolonged fast may increase the acidosis. After the tea pause, feeding with human milk is begun, the quantity being gradually increased. In case of hyposalemia, intravenous administration of sodium chloride (4 per cent solution) is advisable. However, this measure can be taken only if careful chemical tests have been made, for a hypochloremia does not always present a chloropenia. The most important factor of the treatment is the removal of the bacteriotoxic factor. In enteral toxicosis the solution of this problem is difficult because of the inadequacy of specific serotherapy. The serum of dysentery is effective only in rare cases. Repeated blood transfusions are effective in only a few cases. In conditions in which the infectious foci are amenable to surgical treatment, the problem is comparatively simple.

Action of Apple Diet in Diarrhea.—Fasold shows that the efficacy of the raw apple pulp in diarrhea has been ascribed to various factors: to the mechanical cleansing process by the bulky matter, to the toxin adsorbing action of the colloids, and to the sedative and tanning influence of organic acids and of the tanning substances. Without disregarding the sedative and astringent action, the author believes that the therapeutic action is largely due to the mechanical and adsorbing factors. Thinking that cellulose is an important factor, he has treated diarrheal disturbances in children by giving them a suspension of cellulose. He observed that the stools showed almost the same changes as are observed during apple diet. He concludes from this that the adsorptive and mechanical actions of cellulose are mainly responsible for the good results obtained with the apple diet. Further, he describes the studies made by Malyoth, which indicated that the curative physicochemical properties of the raw apple pulp are primarily the result of its pectin content. The author thinks that his observations and those of Malyoth complement each other and concludes that the two colloid groups pectin and cellulose are responsible for the efficacy of the raw apple diet in diarrheal disturbances.

Type of Pneumococci in Children.—Joppich reports the type distribution in pneumococcic infections during childhood. He found that in infections with the x-group of pneumococci the number as well as the severity of disease processes predominates over those that develop in infections with the fixed types of pneumococci. The pneumococci of the x-group are the most frequent causal agents of all types of localized pneumonia and their complications, which develop during childhood. Moreover, the majority of cases of meningitides of

childhood are likewise caused by them. However, in lobar pneumonia with its complications and in pneumococcic peritonitis, types I and II of pneumococci are generally found. But since in children the lobar pneumonias are of less importance (as regards numbers as well as prognosis) than the localized pneumonias, the types I and II are of secondary significance. The author observed also that the pneumococci of the x-group may lead to serious disorders out of a state of complete health. He found that the mortality rate of children is much higher after infections with the x-group of pneumococci than after infections with types I to III.

Treatment of Alimentary Intoxication with Intravenous Drop Infusions.—Schmiedeberg reports that at the children's clinic in Tübingen the drop infusions recommended by Karelitz and Schick were introduced into the treatment of alimentary intoxication of infants. The regulations were strictly adhered to, that is, Ringer's solution with 5 per cent dextrose was infused into the vein of the arm, so that within twenty-four hours the child received from 100 to 125 cc. for each kilogram of body weight. Moreover, in accordance with the directions of Schick the children were given before onset of the drop infusion 100 cc. of a 5 per cent dextrose-Ringer's solution into the sinus longitudinalis or into the already exposed vein of the arm, into which the cannula for the continuous drop infusion was then inserted. Some of the children were given several infusions of citrate blood (from 70 to 100 cc.). The drop infusion was continued for several days. During the first thirty-six hours the children were given no food. The dryness of the oral cavity was counteracted by giving some tea. Cardiac remedies were given every two hours. At the end of the thirty-six hours, food was given in small quantities. The author points out that Schick obtained favorable results with this method in that he reduced the mortality from over 60 to approximately 15 per cent. Her own results, however, were not this favorable. Numerical comparison of former therapeutic results and of those obtained with the Karelitz-Schick method revealed that in the uncomplicated cases the mortality was the same, whether drop infusion or the older methods were used. In the complicated cases the mortality was even slightly higher after the drop infusion. She thinks that the difference in the patient material may explain why she did not obtain the same favorable results with drop infusion as did Schick and Karelitz. She treated only severe cases of alimentary intoxication with this method. She further concedes that, although numerically she was not able to demonstrate the superiority of the drop infusion over other treatments, at the bedside she nevertheless gained the impression that in some of the cases the drop infusion was of distinct advantage.

Wiener klinische Wochenschrift, Vienna

47: 769-800 (June 22) 1934. Partial Index

The Physician's Professional Secrecy and His Duty to Testify. K. Meixner.—p. 769.
Methylene Blue as an Antidote. H. H. Meyer.—p. 773.
Allergic Manifestations and Their Interrelations. B. Fornet.—p. 773.
Boundary Spheres of Surgical Therapy and Ray Therapy. L. Freund. —p. 776.
*Roentgen Examination of Vermiform Appendix. L. Krenn.—p. 778.
Removal of Cancerous Intestinal Occlusions by Carcinolytically Acting Induction Currents. A. Brosch.—p. 781.
Cold Quartz Lamp in Fight Against Nongonorrheal Leukorrhea. M. Scharman.—p. 782.

Roentgenoscopy of Vermiform Appendix.—Krenn used roentgenoscopy of the appendix in cases in which chronic appendicitis was suspected and which presented obscure symptoms of the gastro-intestinal tract. A tabular report shows the results of the roentgenoscopy in 234 cases. In 117 of this number an operation was performed. In 86 of these 117 the appendix had not been demonstrable. Only 9, approximately 10 per cent, were found to be free from changes. All appendixes in which roentgenoscopy revealed filling with contrast medium but in which the filling showed abnormalities (short filling, adhesions, pressure points) were found to be diseased. Only 9 per cent of the appendixes the roentgenoscopy of which had revealed signs of chronic appendicitis were free from pathologic changes. The high number (33 per cent) of erroneous diagnosis of chronic appendicitis before the introduction of roentgenologic examination has been reduced to 9 per cent.

Zeitschrift f. d. ges. Neurol. u. Psychiatrie, Berlin

150: 317-492 (June 18) 1934. Partial Index

*Creatinine Content of Cerebrospinal Fluid. F. Lickint.—p. 317.
Case of Postencephalitic Korsakoff Syndrome. Y. Tsiminakis.—p. 323.
Two Fundamental Types of Compulsion Manifestations. O. Kant.—p. 328.
Pallidal Syndrome with Hyperkinesia and Compulsory Ideas as Sequel Following Poisoning with Nitrobenzene. Alexandra Adler.—p. 341.
*Etiology of Amyotrophic Lateral Sclerosis. S. Dawidenkow.—p. 346.

Creatinine Content of Cerebrospinal Fluid.—Lickint examined 500 specimens of cerebrospinal fluid by means of the calorimetric method suggested by Folin. He determined the normal creatinine content to be between 0.5 and 1.52 mg. per hundred cubic centimeters. Within this normal range the creatinine content of the cerebrospinal fluid amounts to from 50 to 77 per cent of the serum values. In meningitis a complete equalization may take place between the creatinine content of the cerebrospinal fluid and that of the serum, but in renal diseases the difference is generally increased because of greater retention in the serum. In various types of renal diseases (102 cases of acute and chronic nephritis and uremia) increases were usually observed, but the creatinine content of the cerebrospinal fluid did not always go parallel to its rest nitrogen content. The highest creatinine content of the cerebrospinal fluid amounted to 15.6 per hundred cubic centimeters. In fifteen cases of syphilis with a negative reaction in the cerebrospinal fluid the creatinine values were always normal, but eight out of thirty-three cases of metasyphilis or cerebrospinal syphilis showed a slightly increased creatinine content. Of the cerebrospinal fluids of sixty-seven patients with concussion of the brain, six showed a slight increase, while all other cases of encephalitis, meningism, epilepsy, hydrocephalus, multiple sclerosis and cerebral tumors had normal values. Of forty-two patients with meningitis only fifteen showed increases up to 2.44 mg. per hundred cubic centimeters, the increase being somewhat more pronounced in epidemic than in tuberculous meningitis. The author concludes that an increase in the creatinine content of the cerebrospinal fluid has neither a differential diagnostic nor a prognostic significance.

Etiology of Amyotrophic Lateral Sclerosis.—Dawidenkow stresses that the familial amyotrophic lateral sclerosis of children and young persons should not be identified with the amyotrophic lateral sclerosis of adults, for a familial accumulation of the disorder in adults has not been observed as yet. The infantile form of the amyotrophic lateral sclerosis is not a uniform group, for in some cases it seems to be inherited according to the dominant and in others according to the recessive type. Moreover, there are cases in which the bulbar and spastic symptoms are only a part in a much more complicated symptomatology; then there are cases in which the atrophias are developed only in a mild form; in others the amyotrophia may have an uncharacteristic localization or the bulbar symptoms may be absent. However, in some instances the familial form occurring in children presents almost the same symptomatology that is observed in adults. The author shows that, in the search for the etiology of the amyotrophic lateral sclerosis in adults, numerous factors have been considered. He mentions physical and psychic traumas, poliomyelitis and syphilis, and he points out that it has been considered as an abiotrophic systemic disorder. Since the investigations on most of these factors led to no definite conclusion, he decided to resort to the genealogical method. The study of ten genealogical trees revealed to him that in the families of patients with amyotrophic lateral sclerosis there is a considerable accumulation of constitutional anomalies of the nervous system, which become manifest primarily in abnormalities of the tendon, periosteal and cutaneous reflexes. These anomalies in the reflexes may be a weakening, a complete abolishment and an increase, or these various forms may occur together. However, there are approximately as many members of the families who are free from the reflex anomalies. The hereditary transmission of the reflex anomalies takes place according to the dominant type. The author concludes that his studies proved the existence of a hereditary component in the etiology of amyotrophic lateral sclerosis, but further studies will be necessary to solve the problem completely.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

78: 2991-3090 (June 30) 1934

Clinical Importance of Sputum Examination for Tubercle Bacilli. W. Bronkhorst.—p. 3007.
Advantages of Oriented Pulmonary Roentgenoscopy. G. J. van der Plaats.—p. 3014.
*Especially Filtrable Form of Tubercle Bacilli. P. C. Flu.—p. 3019.
*Spontaneous Recovery of Testicle Injured by Estrin Through Gonadotropic Hormone. S. E. De Jongh and E. Laqueur.—p. 3030.

Filtrable Form of Tubercle Bacilli.—Flu demonstrates that filtrates of tuberculous material made with Chamberland porcelain filters L 2 and L 3, being free from the test microorganisms mixed with the material to be filtered, do not produce any signs of classic tuberculosis or of the so-called ultravirus tuberculosis. This would suggest that the germ is not filtrable. The author takes exception to Van Deinse's criticism of the validity of his observations. No one can ever be sure that a filtrate made from a suspension of bacilli through the Chamberland L 3 filter does not contain any bacilli. This is all the more true of the L 2 filter. According to Van Deinse, a large number of acid-fast bacilli are found if the filtrate is injected intraperitoneally into the guinea-pig. Acid-fast bacilli are sometimes found in peritoneal scrapings, provided the animals are dead within five to seven days after injection. It is striking that the acid-fast bacilli from the lymph nodes as well as from the peritoneum are not found in cultures and that sometimes through injections of the lymphatic fluid in guinea-pigs typical tuberculosis may be produced. The postmortem picture of the guinea-pig injected with the so-called tuberculous ultravirus is not described by every investigator in the same way. Although they all declare that no ulcer appears on the site of the subcutaneous injection, some describe regional swellings of the lymph nodes with the presence of acid-fast bacilli, while others describe as the only symptoms swollen bronchial lymph nodes with or without individual bacilli. Some describe infiltrates in the internal organs, especially in the lungs, while others declare that they remain normal. In many cases the ultravirus was believed to be present because in injected animals every trace of pathologic change, aside from the slightest swelling of the bronchial lymph nodes, was absent and in no way could the acid-fast bacilli be developed from the supposed ultravirus forms. The author found that injections of acetone extracts from tubercle bacilli have an activating effect on a tuberculous infection of the guinea-pig only if free acetone is still found in the suspension of the extract to be injected. Only when the filtrates are free from bacterial elements can the tuberculous process in guinea-pigs be activated through injections of such filtrates mixed with acetone extracts. There is no proof that these injections really activate an ultravirus. But even in injection with a slight number of such virulent bacilli it happens, though seldom, that the infiltrate does not form on the site of injection and that it does not ulcerate. The former phenomenon happened once, the latter twice in thirty-two guinea-pigs. In injecting a small number of virulent bacilli the author found as the only symptom of tuberculous infection indurating glands, in which after an investigation of several hours some acid-fast bacilli were found. He could not find any proof of the existence of a tuberculous ultravirus. Perhaps everything that is regarded as the result of an infection with ultravirus may be attributed to the fact that, during filtration, a few tubercle bacilli of weak virulence passed through the filter. Filtration tests with Chamberland L 2, L 3 or even with other filters cannot solve the question of whether a tuberculous ultravirus is present or not.

Spontaneous Recovery of Testicle Injured by Estrin Through Gonadotropic Hormone.—De Jongh and Laqueur state that the size of the testicle is no measure of its endocrine activity. Testicles of young animals treated with the gonadotropic hormone complex from the urine of pregnant women, by which treatment their hormone production is selectively stimulated, are hardly or not larger than those of untreated controls. The power of the gonadotropic hormone complex to cause a discrete growth becomes evident in testicles that are artificially made to regress by a treatment with estrin. In this case their weight is restored more completely by the gonadotropic hormone complex than without it. Far greater is the influence of the gonadotropic hormone complex on the development of Leydig's tissue of the testicle and on the size of the other male organs, measured in this case by the seminal vesicle.

Norsk Magasin for Lægevidenskapen, Oslo

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*Atypical Muciparous Cancers of Stomach ("Linitis Plastica"; Krukenberg's Tumor). L. Kreyberg.—p. 729.

Investigations of Bones of the New-Born.—Toverud's material comprises 100 necropsies in new-born infants, of whom forty-seven were full term, forty-three premature, and ten twins. Chemical analysis of the same portion of the fourth rib and of the parietal bone in these cases showed a variation in the total ash content and in the calcium content, depending partly on whether or not the mother's diet during pregnancy had been deficient and partly on whether or not the child was born at term. Histologic studies of the parietal bone, rib and jaw in the first twenty-five necropsies disclosed somewhat enlarged osteoid zones and small osteoblasts with scanty intracellular spaces, especially in premature infants and those born of mothers receiving an insufficient diet during pregnancy. The author states that early postnatal craniotabes and early deformities of the jaw are direct consequences of a congenital osteoporotic condition and that this condition increases the tendency to the development of rickets.

Intestinal Rupture in Hernia Without Incarceration.—In Røvig's patient, a man aged 69, having an inguinal hernia, rupture of the intestine in the hernial sac occurred after a fall from the height of a meter. The clinical picture was that of diffuse peritonitis. Roentgen examination revealed a perforation in the gastro-intestinal tract. Laparotomy and suture of the ruptured intestine, done about eight hours after the injury, were followed by recovery. A grave complication due to the spinal anesthesia, in the form of cessation of respiration, which set in during the intervention, was successfully treated by placing the patient in the Trendelenburg position and applying artificial respiration for about an hour, with 10 cc. of a 25 per cent solution of pyridine betacarbonic acid diethylamine and 1 cc. of epinephrine intravenously.

Bone Tissue After Roentgen Irradiation.—Dahl irradiated the tibia and femur in young rats, which were then killed at regular intervals. A densification of the irradiated bones, seen as early as three hours after irradiation, became closer during the days following. In a second series, irradiated in the same way, vital staining with alizarin showed intensified coloration on the irradiated side beginning eight hours after irradiation. In a third series, in which carmine was injected two or three hours before the animals were killed, the skin reacted with increased exudation after eight hours following irradiation, and reduced circulation in the bone tissue was demonstrable as early as two days after irradiation. The experiences with alizarin are thought to show that the early densification seen in the roentgenograms is due to deposit calcium.

Atypical Muciparous Cancers of Stomach.—In the three cases of cancer of the stomach of the leather bottle type and one of cancer of the gallbladder with metastases of Krukenberg's type to the ovaries, the tumor cells appeared as single cells or in small groups and produced mucin, mostly contained in intracellular vacuoles. As the cells tend to produce a marked fibrosis reaction and often appear in limited number, especially in the metastases, and as the metastases often give clinical symptoms before the primary tumor, diagnostic errors are frequent in this form of cancer. However, staining the specimens with mucicarmin, Kreyberg says, gives a characteristic picture and facilitates a correct diagnosis.